FINAL
2002 LIST OF IMPAIRED WATERS IN HAWAII
PREPARED UNDER CLEAN WATER ACT §303(d)

Waikele Stream System after a Small Storm

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INTRODUCTION

The federal Clean Water Act (CWA) requires states to obtain and review all existing and readily available surface water quality data and related information, and to prepare and submit to the U.S. Environmental Protection Agency (EPA) biennial lists of waterbodies not expected to meet state water quality standards, even after application of technology-based effluent limitations (CWA §303(d); 40 CFR §130.2; 130.7). The listing requirements apply to water bodies impaired by point and/or nonpoint sources of pollution and include a requirement for listing of those pollutants for which applicable water quality standards are exceeded.

The 2002 List of Water Quality-Limited Segments, plus a priority ranking of listed waters based on severity of pollution and uses of the waters, must be submitted by the Hawaii State Department of Health (HIDOH) to EPA for approval by October 1st. EPA approval of each state's List must be followed by computation of TMDLs for all listed pollutant/waterbody combinations, prepared in accordance with the priority rankings.

Hawaii's previous List, approved by EPA in 1998, contained 19 waters, primarily estuaries, harbors and coastal waters, plus three streams which were newly added in 1998 on the basis of a water quality report prepared for the Department in 1996-98. In July 2000, Hihiwai Stream Restoration Coalition et al. filed a lawsuit against EPA, alleging, among other matters, that EPA's approval of Hawaii's 1998 List was arbitrary and capricious. Although the 1998 List included the three most severely impaired streams assessed in 1996-98, the approved List did not include about sixty other waters identified as moderately or slightly impaired. In a September 5, 2001 court order, Judge David A. Ezra of the Federal District Court for the District of Hawaii remanded the List to EPA for reconsideration (CV. No. 00-00477 DAE/KSC), with the result that 92 additional waters were listed, bringing the total number of waters listed as impaired to 111. The history of the 1998 list revision may be traced in detail by referring to the documents cited in the List of References, page 42; these documents are available by request from the Environmental Planning Office, Department of Health. The complete administrative record for Hawaii's CWA 303(d) List program is maintained by EPA Region IX in San Francisco.

Hawaii's revised 1998 List and data collected from these and other State water bodies over the past six years constitute the body of information reviewed for the 2002 List report. Decisions to either list or not list a water body for which data exist and have been reviewed must be documented (40 CFR §130.7). The periodic listing process allows Department of Health to list waterbodies, which after recent sampling show exceedances; delist waterbodies, which do not after further sampling show exceedances for listed parameters; and more clearly articulate the parameters for which previously listed waterbodies should be listed.

The 2002 303(d) List includes the waterbodies on EPA's revised 1998 List of Impaired Waterbodies minus two stations plus an additional twenty-three new waterbodies: seven streams and sixteen coastal waters. Banyan's Surfing Area was delisted for enterococci based on HIDOH Clean Water Branch data, and the listing for Kawela Beach station was incorporated into Kawela Bay station since HIDOH documentation showed they were the same station.

METHODS

To provide both documentation and consistency when making listing decisions, the Department has developed a new methodology for preparing the 2002 List (Appendix A). The "Listing & Delisting Criteria for Hawaii State Surface Waters" describes the sources of Hawaiian water quality data, data quality requirements, limits on the age of data and sample sizes, and the amount of narrative information needed to sort data into one of three priority categories for making listing decisions. Use of standard criteria will enable the Department to periodically collect and/or assess data sets and make decisions on whether a water body should be listed, not listed or delisted in any subsequent listing cycle. Note that the same information requirements apply to delisting as well as listing decisions. Data sets and supporting documentation were evaluated against both numeric and narrative criteria where applicable. For streams, generally, listings apply to the entire freshwater (<0.5 ppt salinity) portion of a stream system unless a case is documented in which the watershed approach is not applicable.

State Water Quality Standards (WQS; see Hawaii Administrative Rules, Chapter 11-54) for conventional pollutants, such as nutrients and sediments, are expressed in a statistical format which presents criteria in the form of geometric means not to be exceeded by the geometric mean values computed from data sets, and includes two storm event allowances (the 10% geometric mean, not to be exceeded by more than 10% of the sample values, and the 2% geometric mean, not to be exceeded by more than 2% of the sample values). The WQS are further divided into "wet" and "dry" criteria, which, for streams, refer to the "wet" season as November through April and the remainder of the year as the "dry" season, and for embayments and coastal waters refer to shorelines where more than 3 million gallons per day (mgd) of water are discharged from land per shoreline mile as "wet," and shorelines with less than 3 mgd discharge as "dry."

In accordance with the listing/delisting criteria (Appendix A), waterbodies will be sorted into one of three categories. Priority 1 waters have sufficient data to clearly support a listing/delisting decision. Priority 2 waters have limited data, which requires HIDOH to use a weight of evidence approach for listing/delisting decisions. Priority 3 waters have extremely limited data and require future monitoring. For conventional pollutants, a minimum sample size of ten is required for eligibility for Listing Priority 1; a minimum sample size of five to nine is required for eligibility for Listing Priority 2; and fewer than five samples results in assignment of the water body and its numeric data into Listing Priority 3 (waters needing additional monitoring before a decision can be made to list, or not list). When sample sizes are near ten, only the overall (50% level) geometric mean can be computed. If larger sample sizes are available, the sample measurements can be sorted into 10%, 2%, wet and dry criteria tables as a function of the number of measurements available in any of these categories. FIGURE 1 illustrates the general process for listing/delisting conventional pollutants.

For toxic pollutants such as pesticides and heavy metals, which often require expensive analyses, a minimum sample size of three is required for eligibility for Listing Priority 1. Toxic pollutants are characterized by fresh water and saltwater acute and chronic concentration criteria, and fish consumption criteria. FIGURE 2 describes the general process for listing/delisting toxic pollutants. Criteria for indicator bacteria, used to evaluate waters for public health purposes, differ for inland and marine waters. Indicator bacteria counts are evaluated using a minimum sample size of ten, with no allowance for 10%, 2% or wet/dry variations.

Biological surveys of aquatic communities, fish consumption advisories and reports of contaminated sediments are also eligible sources of listing information if prepared by qualified scientists and adequately cover the area in question. These surveys are most likely to be placed in Listing Priorities 2 or 3. Data sets for evaluation of narrative criteria must include at least 3 sampling events and represent conditions in both the wet and dry seasons. These narrative criteria may be evaluated using HIDOH approved habitat or biological assessments as long as they can be directly correlated to specific narrative criteria in HAR 11-54-04. Also, in accordance with HAR 11-54-04(b)(2)(A), acute toxicity standards for sediment may be evaluated using broadly accepted standards such as those developed in Canada and New York, provided that HIDOH deems them appropriate for use in the Hawaiian environment (CCME 1999; NYSDEC 1999). FIGURE 3 describes the general process for listing/delisting based on narrative criteria.

Basic methods for analysis remained constant among all data sources reviewed. Data for all streams were separated into the three priority categories according to sample size. All data sets were distributed over time (within the six-year window from 1996-2002) and space (for inland waters, from upper and lower sampling sites, and for coastal waters, across the waterbody or station area). For instance, ten samples from a single site on a single day were not used to evaluate the status of a station or waterbody. Photographs, visual assessments, written descriptions and appropriate QA/QC measures also must exist for the site.

Basic Process for Listing/Delisting Conventional Pollutants (FIGURE 1)

Priority 1 waterbodies were sorted by station number. The data were then reviewed to determine whether 10 samples existed for either the wet or the dry season. If a waterbody had 10 samples in either the wet or dry season or both, the samples were sorted by season, and the geometric mean was calculated for the season and evaluated against the corresponding wet and/or dry standards. If 10 samples were not present for a particular season and the data were spread between both wet and dry seasons, the data were combined and the geometric means for each waterbody were evaluated against both wet and dry standards. If the sample set for a particular waterbody was large enough, the 2% of the time and 10% of the time standards were also evaluated. The 10% of the time criteria can be measured with a minimum sample size of 100 samples. The 2% of the time criteria can be measured with a minimum sample size of 500 samples. If wet and dry season data are combined because insufficient sample sizes exist to evaluate the standards separately and the geometric mean of these data only exceeds the dry season geomean standard, a majority of the raw data dry season samples must exceed the dry season standard to warrant listing.

Waterbodies with 5-9 samples were placed in the Priority 2 category, sorted by station number and then reviewed to determine if any of the samples exceeded the wet or dry standard. If any of the samples from a particular waterbody exceeded the standard by a factor of 2 or more, the data set was reviewed to see if there were at least 5 samples from the corresponding wet or dry season. If sufficient data were present, the geometric mean was calculated to determine whether the corresponding standard was exceeded by a factor of 2. Waterbodies that did not meet Priority 2 criteria were compiled for future monitoring (APPENDIX C). Priority 3 waterbodies were also compiled for future monitoring (APPENDIX C).

FIGURE 1: Flow Chart of Listing/Delisting Process for Conventional Pollutants

(turbidity, total suspended solids, nutrients, chlorophyll a, temperature, dissolved oxygen, pH and indicator bacteria)

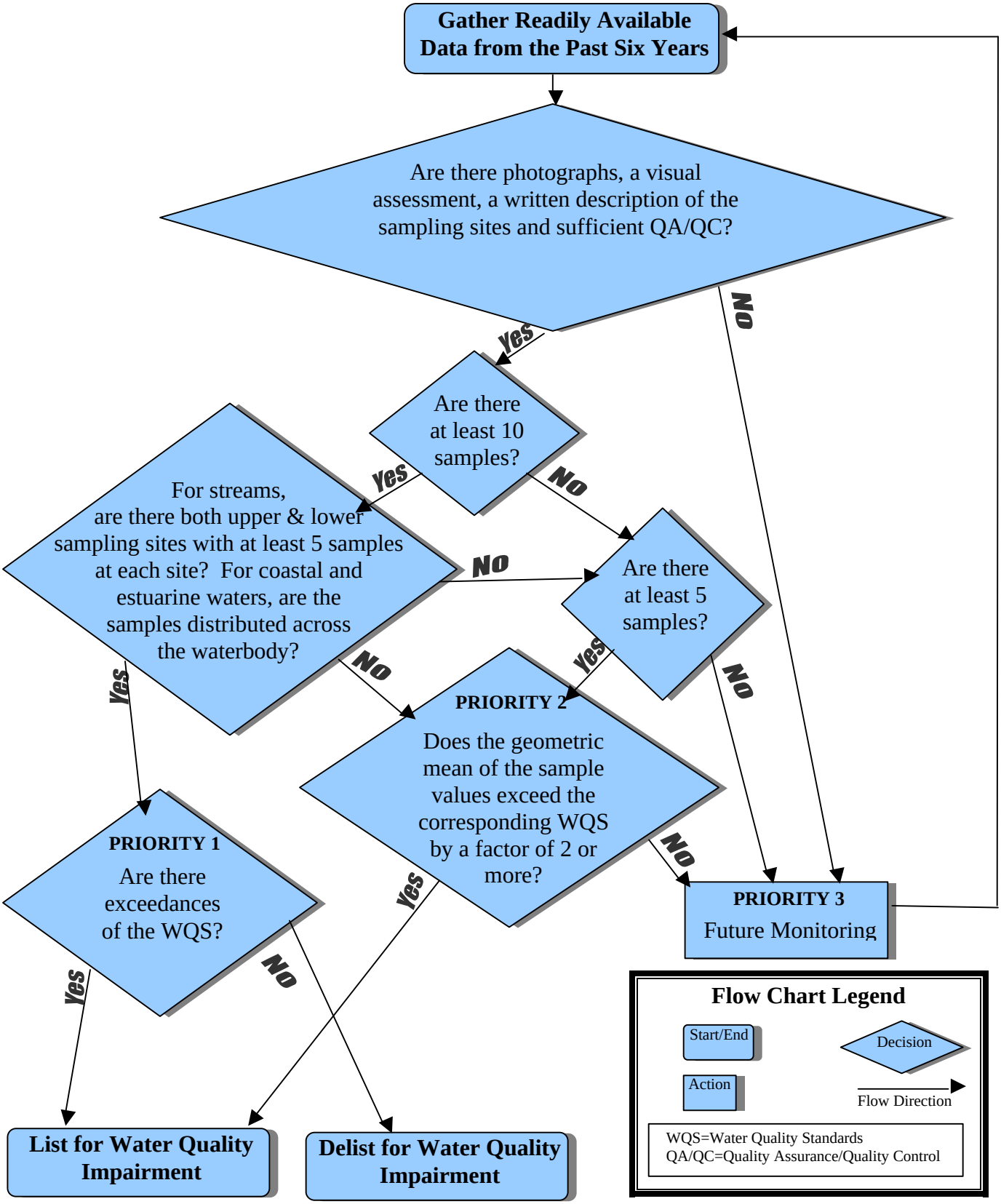


FIGURE 2: Flow Chart of Listing/Delisting Process for Toxic Pollutants

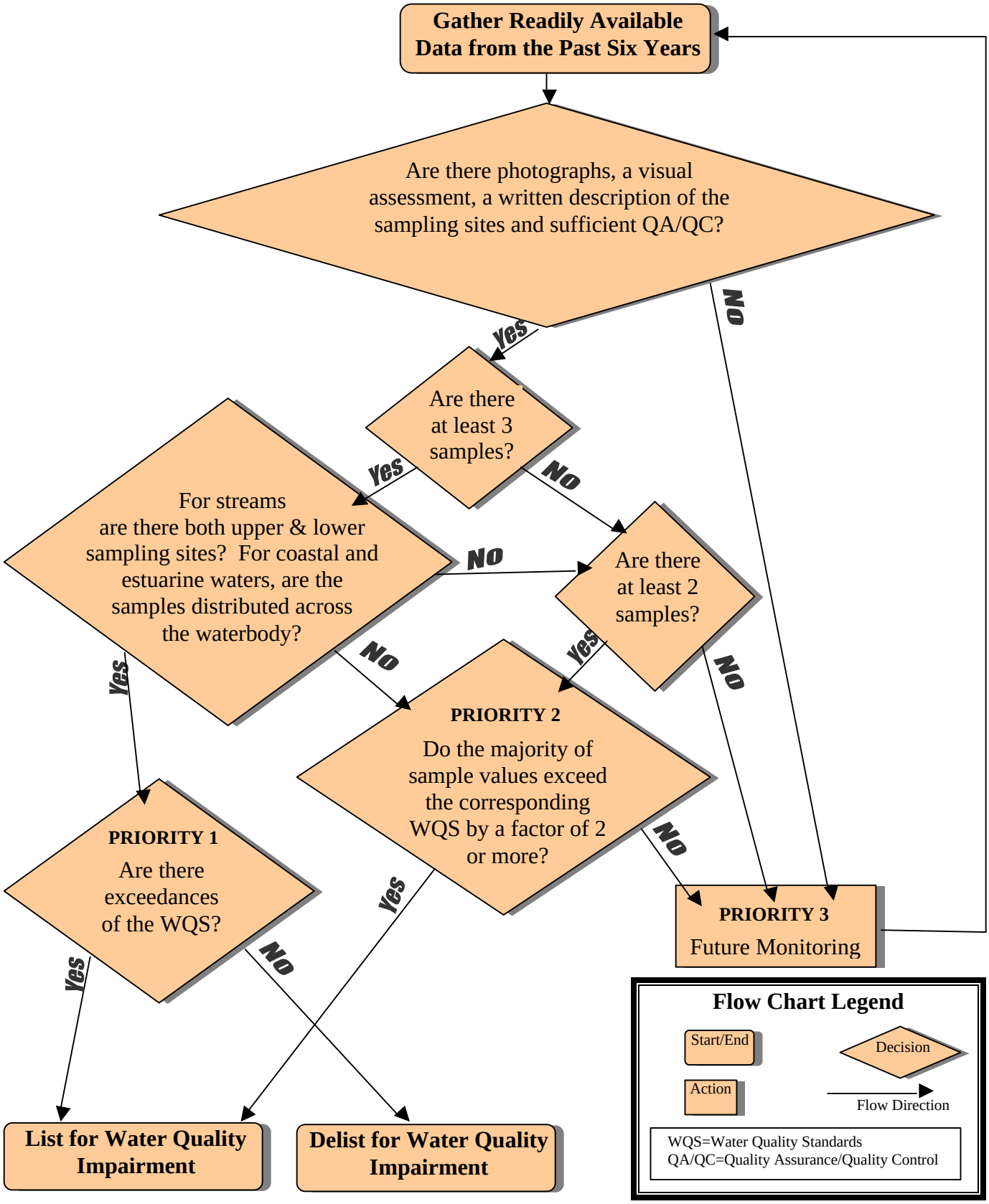
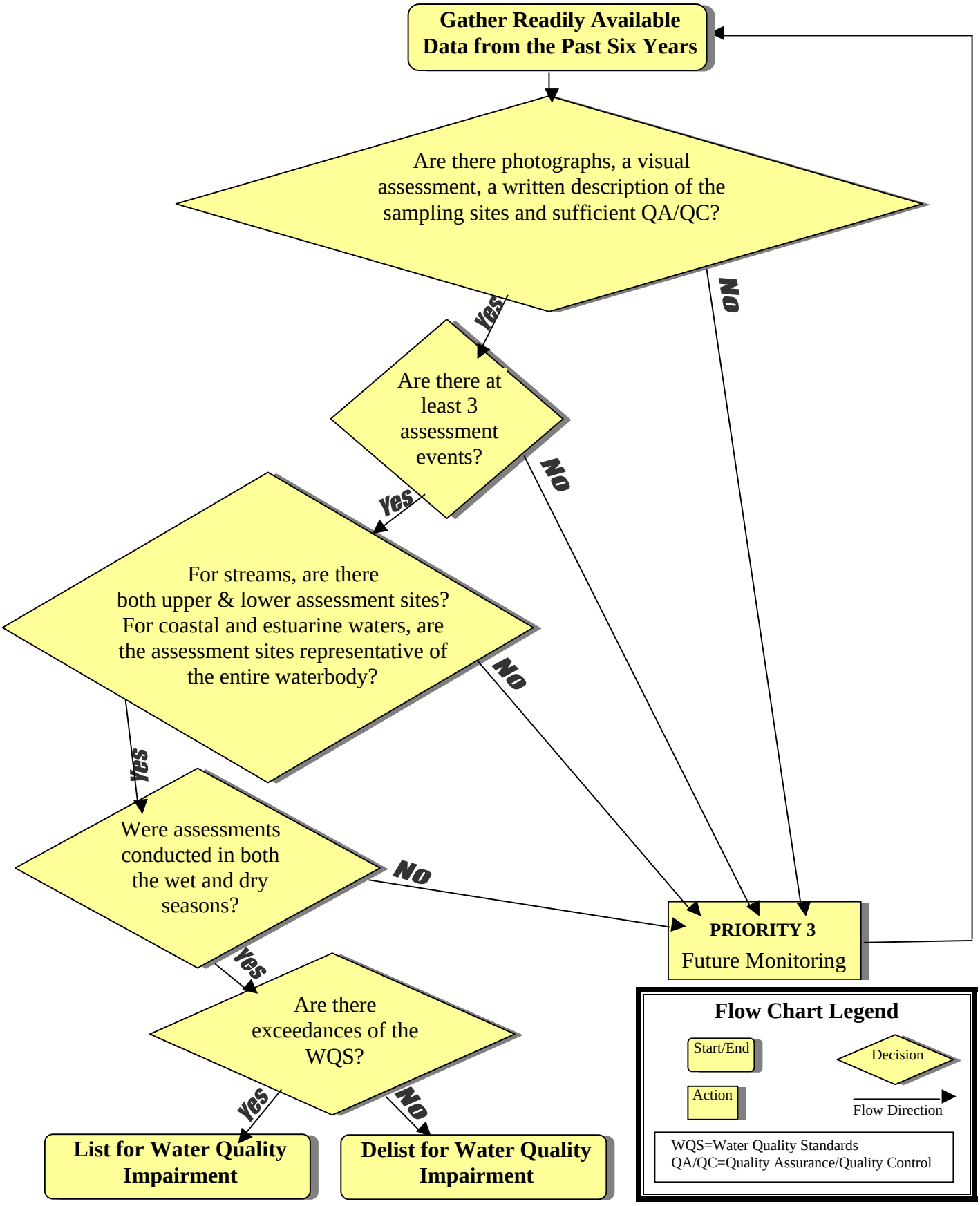


FIGURE 3: Flow Chart of Listing/Delisting Process for Narrative Criteria



Data Sources Reviewed

A formal call for data was published statewide in August 2001; no responses were received. Environmental Planning Office staff contacted a variety of organizations directly following this call for data. Data were also directly solicited from a variety of organizations. The summary communications log is attached as Appendix B.

Major data sources reviewed include the following:

1. Review of data in EPA's national water quality database, STORET

   Tetra Tech, Inc. prepared a summary of data archived in STORET from 1996 to the present.

2. Review of U.S. Geological Survey (USGS) data from the National Water Quality Assessment Program (NAWQA)

   The NAWQA program is a national initiative of the USGS to "to assess the status and trends in the quality of freshwater streams and aquifers, and to provide a sound understanding of the natural and human factors that affect the quality of [those] resources." Data were retrieved from the Oahu NAWQA homepage (http://wwwdhihnl.wr.usgs.gov/nawqa/) and analyzed by Tetra Tech, Inc. on contract to EPA. Results of the initial data analysis were reviewed by Environmental Planning Office staff.

3. Review of data collected by the Department's Clean Water Branch

   Environmental Planning Office staff summarized data collected from streams by the Clean Water Branch, Monitoring Section. Lab samples and field samples were sorted separately but with the same methodology. All data were obtained through the Hawaii State Department of Health, Clean Water Branch.

   Environmental Planning Office Staff also reviewed a Notice of Finding of Violation [NFV] for Copper at Barber's Point. This report was prepared by the Clean Water Branch, Enforcement Section. This section reported that no other NFVs were likely to meet our criteria.

4. Stream surveys conducted by AECOS, Inc., using the National Resource Conservation Service (NRCS) Visual Assessment Protocol, Version 1.0, dated January 31, 2001

   AECOS staff revisited fifteen streams assessed in the 1996-98 Water Quality Report to determine, via application of the NRCS protocol, if conditions in any of the streams had changed over the past six years. 2002 visual assessments were conducted by AECOS, Inc. for Anahulu (upper site is on Kawailoa tributary), Hakalau, Hanapepe, Kahaluu, Kahanaiki (flows into Kawainui Marsh), Kaieie, Kahawai Nui Canal, Kiikii (upper and lower sites on Kaukonahua tributary),

Kolekole, Maunawili (flows into Kawai Nui Marsh), Paukauila (upper site is on Opaeula tributary), Uhelekawawa , Waikane and Wailuku stream systems. Environmental Planning Office staff reviewed these results.

5. Biological Assessments

Environmental Planning Office (EPO)staff reviewed biological assessments of Halawa, Waiaalala, Kukui, Ohiahuea, Waikaloa/Waiapuka streams and Wailoa/Waipio River, following the process for evaluating narrative standards. All bioassessments were conducted by Mike Kido using his formal protocol, the Hawaii Stream Bioassessment Protocol (HSBP).

EPO staff also reviewed biological assessments, conducted by HIDOH to supplement TMDL development. These bioassessments of Kawa and Waimanalo streams were also conducted using the HSBP protocol.

6. Other Environmental Assessments and Investigations

A number of environmental assessments and investigations conducted by private firms and military entities were preliminarily reviewed by Wendy Wiltse of the Environmental Protection Agency (EPA). Environmental Planning Office staff reviewed reports for Barbers Point Harbor, Oahu; Kaumalapau Harbor, Lanai; Maalaea Harbor, Maui; Kahului Airport area, Maui; Manuwai Canal, Oahu; and Kumumauu Canal, Oahu.

7. Other Data Sources

Nawiliwili Bay Watershed
Data from the Nawiliwili Watershed Association were reviewed for inclusion in this report.

Waimanalo Stream
Data presented by Michael S. Tomlinson and Eric H. De Carlo in their 2001 report, *Investigations of Waimanalo and Kaneohe Streams*, were reviewed for possible use in listing Waimanalo Stream for temperature, DO and pH exceedances. Data collected by Ed Laws for the Waimanalo Total Maximum Daily Load report were also reviewed (Harrigan and Burr 2001).

Waikapu Stream
A trained United States Fish and Wildlife Service Technician collected samples from the lower freshwater reach of Waikapu Stream at Kealia Pond National Wildlife Refuge on Maui. Environmental Planning Office staff reviewed this data.

Heeia Stream
Under the supervision of Dr. Dave Krupp, students have been sampling water quality parameters at a number of sites along Heeia Stream. The data are available at http://www.wcc.hawaii.edu/usda/Heeia.

West Maui
Environmental Planning Office staff reviewed data from Steven Dollar et al.'s 1999 report, "Investigations on the Relation Between Cesspool Nutrients and Abundance of *Hypnea Musciformis*, West Maui, Hawaii," and Dollar's 2001 report "Response of Nearshore Marine Water Chemistry to Termination of Sugarcane Agriculture; West Maui, Hawaii."

Fish Consumption Advisories
Data from waterbodies with fish consumption advisories were reviewed to determine whether sufficient data existed to warrant listing for those pollutants included in the advisories.

Quality Assurance/Quality Control (QA/QC) Considerations

QA/QC procedures document data quality by describing data collection and analysis procedures. QA/QC basically answers the questions “Where did those number comes from, and why should anyone believe them?” The Department's Clean Water Branch, Environmental Planning Office, and Laboratory operate under the terms of a "Quality Management Plan For Surface Water Quality Monitoring," approved by EPA Region IX and dated December 9, 1999.

The USGS/NAQWA program operates under written QA/QC plans approved by the agency. A summary of AECOS QA/QC methods are attached in APPENDIX D. Tetra Tech QA/QC guidelines should be received in the next few weeks. A summary of Tetra Tech, Inc. QA/QC procedures for this project are attached in APPENDIX E.

RESULTS

1. Review of Data in EPA's National Water Quality Database, STORET

Tetra Tech’s review of STORET primarily included data on conventional pollutants that HIDOH, Clean Water Branch collected from coastal and estuarine waterbodies. The data analysis showed that 20 stations not previously listed exceeded the Water Quality Standards for at least one parameter. One station on Kauai exceeded the dry season turbidity standard. Three stations on Oahu exceeded the wet season enterococcus standard. Kauai had seven stations that exceeded both the wet and dry turbidity standards and three that exceeded only the dry turbidity standard. The island of Hawaii had two stations that exceeded the wet season enterococcus standard and one that exceeded both the wet and dry enterococcus standards. Also, two stations on Hawaii exceeded both the wet and dry standards for turbidity while one exceeded only the dry standard for turbidity. These stations and the corresponding exceedances are detailed in TABLE 1. HIDOH Clean Water Branch could not produce photographs and a written description of Waimanalo State Park Station; therefore, this station is ineligible for listing at this time based on the listing/delisting criteria in APPENDIX A.

TABLE 1: Tetra Tech, Inc. STORET Review Results

Island	Station Number	Station Name	Data shows new pollutant exceedance for waterbody on 1998 List	Data Shows no exceedance for pollutant/waterbody combination on 1998 List
Hawaii	1235	Banyans Surfing Area		enterococcus - wet season
	1138	Hilo Bay (Canoe Beach)	turbidity - wet and dry season	
	1102	Hilo Bay (Exit of Ice Pond)	enterococcus - wet season	
	1107	Hilo Bay (Lighthouse)	enterococcus - wet season	
	1141	Hilo Bay (Offshore)	nitrate-nitrite – wet and dry seasons ammonium – wet and dry seasons	total nitrogen – wet and dry seasons
	1110	Honolii Cove (Ocean)	turbidity - wet and dry season	

TABLE 1: Tetra Tech, Inc. STORET Review Results (continued)

Island	Station Number	Station Name	Data shows new pollutant exceedance for waterbody on 1998 List	Data Shows no exceedance for pollutant/waterbody combination on 1998 List
Hawaii	1121	Leleiwi Beach Park	enterococcus - wet and dry season	
	1142	Vacationland*	turbidity - dry season	
Kauai	801	Anini Park Pavilion	turbidity - dry season	
		Nawiliwili Bay offshore embayment	nitrate-nitrite – wet and dry seasons ammonium – wet and dry seasons	total nitrogen – wet and dry seasons
Maui	689	H.A. Baldwin Park	turbidity - wet and dry season	
	693	Hanakaoo Beach	turbidity - wet and dry season	
	688	Hookipa	turbidity - dry season	
	695	Kahekili Beach	turbidity - wet and dry season	
	654	Kahului Bay (Hukilau Hotel)	turbidity - wet and dry season	
	680	Kahului Bay	total nitrogen – wet season nitrate-nitrite – wet and dry seasons ammonium – wet and dry seasons	total nitrogen – dry season
	681	Kamaole Beach #1	turbidity – dry season	
	685	Keawekapu Beach	turbidity – dry season	
	694	LauniuopokoWayside Park	turbidity - wet and dry season	
	702	Mai Ponia Oe Iau Park	turbidity – dry season	
	697	Olawalu Beach [Teen Challenge (mi 14)]	turbidity - dry season	
	664	Paia Bay (Paia Outfall)	turbidity - wet and dry season	
	696	Puunoa (Baby) Beach	turbidity - dry season	
	700	Spreckelsville Beach	turbidity - wet and dry season	
	691	Wailea Beach	turbidity – wet/dry	
Oahu	ALWS04	Ala Wai Canal and Harbor [Manoa-Palolo Stream (KHS)]	chlorophyll *a* - overall	
	201	Hanauma Bay (oceanic)	nitrate-nitrite – dry season ammonium –dry season	total nitrogen – wet and dry seasons

TABLE 1: Tetra Tech, Inc. STORET Review Results (cont.)

Island	Station Number	Station Name	Data shows new pollutant exceedance for waterbody on 1998 List	Data Shows no exceedance for pollutant/waterbody combination on 1998 List
	170	Kaiaka Bay	total nitrogen – wet season nitrate-nitrite – wet and dry seasons ammonium – wet and dry seasons	total nitrogen –dry season
Oahu	403	Kaneohe Bay (Central Region)	total nitrogen – wet season nitrate-nitrite – wet and dry seasons ammonium – wet and dry seasons turbidity – wet season	total nitrogen – wet season
	402	Kaneohe Bay (Northern Region)	total nitrogen – wet season nitrate-nitrite – wet and dry seasons ammonium – wet and dry seasons turbidity – wet season	total nitrogen – wet season
	401	Kaneohe Bay (Southern Region)	total nitrogen – wet season nitrate-nitrite – wet and dry seasons ammonium – wet and dry seasons turbidity – wet season	total nitrogen – wet season
	208	Kualoa Beach Park	enterococcus - wet season	
	443	Maunalua Bay (open coastal)	total nitrogen – wet season nitrate-nitrite – wet and dry seasons ammonium – wet and dry seasons chloropyll *a* – dry season	total nitrogen –dry season
	196	Waimanalo Bay	enterococcus - wet season	
	226	Waimanalo State Park	enterococcus - wet season	

Source: Tetra Tech, Inc. review of STORET data.
*indicates waterbody/station not previously listed

2. Review of U.S. Geological Survey Data from the National Water Quality Assessment Program (NAWQA)

After analyzing these data, Environmental Planning Office staff concluded that the data for conventional pollutants should not be utilized for Priority 1 listing/delisting decisions in the 2002 303(d) listing process but may be used to guide future monitoring (APPENDIX C). Water column data were collected in limited sample sizes from single sites on each of the streams sampled and do not meet HIDOH's Priority 1 listing/delisting criteria.

Many of the toxics samples were collected from whole fish tissue samples and sediment samples. Hawaii Administrative Rules 11-54-04(b) do not establish numeric criteria for these assays. However, narrative criteria for toxics are established in 11-54-04, which may be evaluated using established threshold levels for toxic effects. Sample sizes for many of the sample mediums, individually, were less than the minimum sample size of three; however, in some cases both sediment and fish tissue samples were considered together to meet minimum sample sizes and determine whether narrative standards for toxic pollutants were exceeded. In Manoa and Nuuanu streams, chlordane levels in sediment samples exceeded the Canadian Sediment Quality Guidelines (CSQG) for the Protection of Aquatic Life in some cases by a factor greater than 10. Chlordane levels in composite fish tissue samples from these streams also exceeded the New York State Department of Environmental Conservation (NYSDEC) wildlife guidelines for fish tissue. Additionally, dieldrin levels in Manoa, Nuuanu and Kanoehe streams exceeded both the CSQG and NYSDEC standards. Review of the USGS water column data for toxics at Waikele and Manoa streams also revealed an exceedance of the numeric standard for dieldrin [HAR 11-54-04(b)(3)] in Manoa Stream at Kanewai Field.

3. Review of Data Collected by the Department's Clean Water Branch

Clean Water Branch (CWB), Monitoring Section, Stream Data

Two estuarine portions of Oahu stream systems were evaluated based on CWB data collected for Total Maximum Daily Load (TMDL) development. Both estuaries sorted into the Priority 1 category for listing/delisting decisions. Estuaries do not have seasonal standards. Kawa estuary showed exceedances for nitrate, total nitrogen, ammonium and chlorophyll a. Waimanalo estuary showed exceedances for nitrate, total nitrogen, ammonium and turbidity. TABLE 2 summarizes the results of this analysis. Unfortunately, HIDOH Clean Water Branch could not produce photographs and written descriptions of the sites; therefore, based on the listing/delisting criteria, these sites are ineligible for listing and should be scheduled for future monitoring that should include documentation of the sites.

TABLE 2: Summary of Data Analysis of Clean Water Branch Estuary Data

Estuary Code	Estuary Name	Island	Stream on 1998 List (Y/N)	HIDOH Clean Water Branch Data 1996-2002 Numeric Exceedances					
				NO3	TN	TP	NH4	Chl a	Turbidity
3-2-11-E	Kawa Estuary	Oahu	N	E	E	NE	E	E	-

3-2-15-E	Waimanalo Estuary	Oahu	N	E	E	NE	E	NE	E

NE = No Exceedance E= Exceedance

Twenty-seven streams throughout the islands had sufficient data to evaluate whether an exceedance of the Water Quality Standards occurred. Eleven of these streams were already listed on EPA's 1998 303(d) List for at least one parameter. TABLE 3 summarizes the results of the analysis of Clean Water Branch stream data.

Priority 1

On Oahu, numeric data were obtained for five streams that were previously listed by visual assessment for nutrients in general. These data more specifically identify which nutrient standards were exceeded in these streams. For three of these streams, the data confirmed the listing for turbidity with exceedances of the standard. Also, Kawa Stream on Oahu showed no exceedances in both the wet and dry seasons for suspended solids, for which it was listed in 1998. Nuuanu Stream, previously listed for nutrients and trash, showed an exceedance of the wet standard for turbidity. Kalihi Stream, previously listed for nutrients, turbidity and trash, showed a wet season turbidity exceedance. Three streams on Oahu that were not previously listed showed turbidity exceedances. See TABLE 3. The data collected by HIDOH Clean Water Branch for Waimanalo , Kawa and Punaluu Streams are not eligible to be used in this round of listing decisions since no photographs and written site descriptions were available.

On Maui, three streams that were not previously listed showed exceedances of the dry season turbidity standard. On the island of Hawaii, two streams that were not previously listed showed exceedances of the dry season turbidity standard, while two streams that were also not previously listed showed exceedances of the wet season turbidity standard. Additionally, on Hawaii, two streams previously listed for turbidity demonstrated no exceedances. Honolii stream, previously listed for nutrients and turbidity, exceeded the dry season turbidity standard. On Kauai, Hanalei River and Kapaa Stream, listed in 1998 for turbidity by visual assessment, exhibited numeric exceedances of the wet season turbidity standard. See TABLE 3.

Priority 2

Maliko stream on Maui and Wailele stream on Oahu exceeded the wet season turbidity standard by a factor of 2. See TABLE 3. The Clean Water Branch data from Wailele Stream cannot be used for listing/delisting decisions at this time since photographs and written site descriptions were not available for these sites.

TABLE 3: Summary of Data Analysis of Clean Water Branch Stream Data

	Stream Code	Waterbody Name	Island	Stream on 1998 List (Y/N)	Pollutants on 1998 List	HIDOH Clean Water Branch Data 1996-2002 Numeric Exceedances				
						TSS	NO3	TN	TP	Turbidity
Priority 1	3-2-07	Kahaluu	Oahu	Y	nutrients, turbidity	NE*	D*	NE*	NE*	D**
	3-2-10	Kaneohe	Oahu	Y	nutrients, turbidity	NE****	W,D****	D****	NE****	D****
	3-4-10	Waikele	Oahu	Y	nutrients, turbidity	NE***	W***	W***	NE***	W,D****
	3-2-11	Kawa	Oahu	Y	nutrients, turbidity, suspended solids	NE****	W,D****	W,D****	W,D****	-
	2-1-19	Hanalei	Kauai	Y	turbidity	-	-	-	-	W*
	3-1-16	Punaluu	Oahu	N		-	-	-	-	W*
	3-2-04	Waiahole	Oahu	N		-	-	-	-	NE*
	3-2-15	Waimanalo	Oahu	Y	nutrients, turbidity, suspended solids	NE****	W,D****	W,D****	NE****	W,D****
	3-3-09	Nuuanu	Oahu	Y	nutrients, trash	-	-	-	-	W*
	3-3-11	Kalihi	Oahu	Y	nutrients, turbidity, trash	-	-	-	-	W*
	6-1-01	Ukumehame	Maui	N		-	-	-	-	D*
	6-1-11	Honokohau	Maui	N		-	-	-	-	D*
	6-2-06	Makamakaole	Maui	N		-	-	-	-	D*
	8-1-12	Aamakao	Hawaii	N		-	-	-	-	D*
	8-1-13	Niulii	Hawaii	N		-	-	-	-	D*
	8-1-14	Waikama	Hawaii	N		-	-	-	-	W*
	8-2-33	Kolekole	Hawaii	Y	nutrients, turbidity	-	-	-	-	NE*
	8-2-37	Kapehu	Hawaii	N		-	-	-	-	NE*
	8-2-56	Honolii	Hawaii	Y	nutrients, turbidity	-	-	-	-	D*
	8-2-60	Wailuku	Hawaii	Y	nutrients, turbidity	-	-	-	-	NE*
	2-2-04	Kapaa	Kauai	Y	turbidity	-	-	-	-	W***
	2-2-08	Wailua	Kauai	N		-	-	-	-	NE***
Priority 2	3-1-08	Wailele	Oahu	N		-	-	-	-	W***
	6-3-01	Maliko	Maui	N		-	-	-	-	W***
	8-1-09	Wainaia	Hawaii	N		-	-	-	-	W***

W (Wet Standard Exceedance), D (Dry Standard Exceedance), NE (No Exceedance), - (Insufficient Data)

*indicates that both wet and dry season samples were combined for analysis because data were not adequate to compare each season separately
**indicates that enough samples from the dry season were present to compare those samples against the dry season standard
***indicates that enough samples from the wet season were present to compare those samples against the wet season standard
****indicates that enough samples were present from both the wet and dry seasons to compare those wet season sample geometric means against the wet season standard and dry season sample geometric means against the dry season standard

No Exceedance found in stream listed in 1998

Exceedance found in stream not listed in 1998

Clean Water Branch, Enforcement Section
Review of Notice and Finding of Violation (NOFV) Docket No. 2002-CW-EO-07, Department of Health, State of Hawaii versus Marisco, Limited Barbers Point Harbor, Kapolei:

This NOFV for Barber's Point Harbor was reviewed for listing at the suggestion of EPA staff because copper exceedances were suspected. Ambient sampling sites were found not to be representative of the waterbody as a whole. Sites were placed at the edge of the harbor between the dry docks and the shore. Copper levels at these sites were well above the acute toxicity standard for copper, but more sampling is recommended to determine whether the entire harbor is impaired. Future sampling sites should be distributed across the harbor.

4. Stream Surveys Conducted by AECOS, Inc.

According to the narrative listing criteria, the visual assessments results fall into Priority 3, Future Monitoring (see APPENDIX C). The assessments were only conducted during the dry season and at least 3 assessments were not completed. All but one of the streams assessed was previously listed by photographic visual assessment. Some of the surveys aligned with EPA's original determinations of impairment; however, many of them did not. HIDOH does not support future listing determinations based on photographic assessments; however, delisting will for previously listed waters will not occur until the listing/delisting criteria (APPENDIX A) are met. The Hanapepe stream system visual assessment upholds the 1998 turbidity listing and signifies that future monitoring may be necessary for other parameters such as nutrients; however, since the site of lower visual assessment was within the estuarine portion of the stream, an assessment of the lower freshwater portion of the stream system should be conducted. The Kahawainui and Kahaluu stream system assessments uphold the 1998 listings for turbidity and nutrients. The Maunawili stream system assessment upholds the 1998 listing for turbidity nutrients and trash. Results from 2002 Visual Assessments for Anahulu, Hakalau, Kolekole and Kaieie differ from the findings that led to the 1998 listings for nutrients and turbidity; this difference may be due to changes in land use. The Visual Assessments for Paukauila, Kawainui, Wailuku and Uhelekawawa were inconclusive since estuarine systems were reviewed, using the NRCS protocol, which was not developed or tested for use in estuarine systems. The visual assessment for Waikane Stream system indicates that there may be a problem with impairment; however, future monitoring is necessary. Embeddedness, bank stability and trash may be problems in this stream system. The Kiikii stream system assessment also indicates that future monitoring is necessary.

TABLE 4: Summary of 2002 AECOS, Inc. Visual Assessments

Stream System Number	Stream System Name	Overall Lower Site Score	Overall Upper Site Score	Comments
2-3-07	Hanapepe	Low to Medium	High to Very High	Upholds 1998 turbidity listing. May need to be listed for other parameters as well i.e. nutrients. However, a visual assessment needs to be conducted in the lower freshwater segment.
3-1-07	Kahawainui	Low	Very High	Upholds 1998 listing for turbidity and nutrients.
3-2-02	Waikane	Medium to Low	High	Requires future monitoring for decision on impairment.
3-2-07	Kahaluu	Low	High	Upholds 1998 listing for turbidity and nutrients.
	Kahanaiki	Medium to Low	High to Very High	Maunawili listed in 1998 for nutrients, turbidity and trash.
3-2-13	Maunawili	Low	Medium to Very High	Upholds 1998 listing for turbidity, nutrients and trash.
3-6-06	Kiikii	Medium	Medium to High	Requires future monitoring for decision on impairment. Listed in 1998 for nutrients and turbidity.
3-6-07	Paukauila	Medium (Estuary)	High to Very High	Need visual assessment for lower freshwater segment. Listed in 1998 for nutrients and turbidity.
	Kawai Nui Canal	Low (Estuary)	Low (Estuary)	Might uphold 1998 listing for turbidity and nutrients but methodology is inappropriate for assessing estuaries.
3-6-08	Anahulu	Medium	High to Very High	Differs from 1998 listing for nutrients and turbidity, changes may be due to changes in land use, upper site could be used by CWB for future monitoring.
8-2-32	Hakalau	High to Very High	Very High	Differs from the 1998 listing for nutrients and turbidity, changes may be due to changes in land use
8-2-33	Kolekole	Medium to High	Very High	Differs from 1998 listing for nutrients and turbidity, changes may be due to changes in land use.
8-2-49	Kaieie	High to Very High	Very High	Differs from the1998 listing for nutrients, changes may be due to changes in land use
8-2-60	Wailuku	High (Estuary)	Very High to High to Low	May differ from 1998 listing for nutrients and turbidity but again need assessment of lower freshwater segment.
	Uhelekawawa	Low (Estuary)	Medium to High	Need visual assessment for lower freshwater segment. Listed in 1998 for turbidity.

5. Biological Assessments

After reviewing biological assessments of Halawa, Waiaalala, Kukui, Ohiahuea, Waikaloa/Waiapuka streams and Wailoa/Waipio River, Environmental Planning Office staff concluded that insufficient data were available to determine whether the streams exceeded the narrative standards. The biological assessments did not meet the listing/delisting criteria for narrative criteria because assessments were not sufficiently distributed over time and space. Halawa Stream, listed in 1998 for nutrients and turbidity, had a sufficient number of sites; however, sampling was not representative of both wet and dry season conditions. The rest of the bioassessments were unclear as to the number of sampling sites and distribution of sampling events. These stream systems should be scheduled for future monitoring (see APPENDIX C). TABLE 5 summarizes the results of the biological assessments.

TABLE 5: Summary of Biological Assessments*

Stream System Number	Stream System	Number of Sites	Includes Upper Site (Y/N)	Includes Lower Site (Y/N)	Conducted in Wet Season (W), Dry Season (D) or Both (B)	Overall Biotic Integrity Rating	Overall Habitat Rating**
3-4-02	Halawa	3	Y	Y	W	Impaired	Poor
8-1-31	Waiaalala	Unclear	Unclear	Unclear	Unclear	Poor	Poor
8-1-29	Kukui	Unclear	Unclear	Unclear	Unclear	Very Good	Good
8-1-24	Ohiahuea	Unclear	Unclear	Unclear	Unclear	Good	Good
8-1-27	Waikaloa	Unclear	Unclear	Unclear	Unclear	Very Good	Good
8-1-44	Wailoa/Waipio	Unclear	Unclear	Unclear	Unclear	Poor to Fair	Fair to Good

Source: Kido 2001, 2001 and 2002.

*References to a number of other biological assessments were also included in this report and may be useful in future listing processes. The following biological assessments were referenced: Hanakapiai-Kauai, Wailua-Molokai, Hanawi-Maui, Alelele-Maui, Limahuli-Kauai, Hakalau-Hawaii, Nanue-Hawaii, Palauhulu-Maui, Makamakaole-Maui, Puali-Kauai, Kawailoa-Oahu, Opaeula-Oahu, Kawaiiki-Oahu, Poamoho-Oahu, Helemano-Oahu and Huleia-Kauai.

***0-40% of Reference Conditions=Impaired, 40-60%=Very Poor, 60-70%=Poor, 70-80% = Fair, 80-90%=Good, 90-100%=Very Good*

The Waimanalo and Kawa Stream bioassessments were only conducted during the dry season and were therefore not utilized for listing/delisting decisions.

6. Other Environmental Assessments and Investigations

Most of the environmental assessments and investigations summarized by EPA were draft reports that did not have sufficient data for listing/delisting decisions. Those that were final had data from dates outside the scope of this report. The draft environmental impact statement for Barbers Point Harbor showed exceedances on a single date, and future monitoring is required for a listing/delisting decision. The final environmental assessment for Kaumalapau Harbor contains data that that does not show exceedances of water quality criteria. The draft remedial investigations contain data that may be useful for listing/delisting decisions with future monitoring. TABLE 6 summarizes the review of environmental assessments and investigations. Many of the sites should be scheduled for future monitoring (see APPENDIX C).

TABLE 6: Review of Environmental Assessments and Investigations

Reference	Data Source	Data Description	Comments	Action
DSEIS Modifications to Kalaeloa Barbers Point Harbor, Oahu USACE, August 2000 Appendix B: Water Quality Study	David Ziemann, The Oceanic Institute	2/17/00: 3 sta in harbor, 12 outside harbor, 3 depths at each station. TSS, turbid, Chla, Nh4,No3, TN, PO4 TP1975-2000: geometric means reported for TN, NH4, NO3, TP, PO4, Chl, TSS turbidity	Raw data presented for only one date. DSEIS presents detailed site description.	Future Monitoring required for decision. Review final when available.
Final EA Kaumalapau Harbor Breakwater Repair Lanai, USACE, May 2002 Appendix A: Assessment of Water Quality Pre-construction Monitoring	Marine Research Consultants	1999: 6 survey dates, 12 stations, 2 depths turbidity, TSS, salinity, pH. Geometric means presented for 6 samples from each station.	Turbidity low. EA has site description.	No exceedances identified in EA.
Final SEIS Maalaea Hbr for Light-Draft Vessels, Maui ACOE. July 1994	HIDOH	1991-1993. Numeric exceedences shown for coliform,enterococcus, turbidity N, NH3, P, chl.	Entero, turbidity, chl show some exceedances.	Clean Water Branch data for this waterbody reviewed by Tetra Tech in 2002 (showed no enterococci exceedances), Stations already listed for turbidity and chlorophyll a.
DSEIS II Maalaea Hbr for Light Draft Vessels, Maui ACOE, HDLNR May 1998	HIDOH	1991-1996 Numeric exceedences shown for fecal, entero turbidity N, NH3, P, Chl.	Entero, turbidity, N, NH3 and Chl show exceedances.	Review final when available. Note: All data will be “outdated” by next listing cycle.
FEIS Kahului Airport Improvements, Maui (USDOT, FAA, HDOT), Sept. 1997 (NEED APPENDIX G)	OIC	7/94, 11/94: 7 offshore stations, 4 nearshore stations (2 depths), 2 stations in Kalialinui Gulch, 1 station in Kanaha Pond. Salinity, pH, turbidity TSS, No2-3, NH#, TN, PO4, TP silicate, Chl, TPH measured. Geometric means also shown for 1981, 1990, 1993.	Only data shown are for nearshore. Exceedences for turbidity, N and chl.	No action. Data before 1996.
Draft Remedial Investigation Report for Manuwai Canal, Hickam AFB, Oahu US Air Force. Feb 2002	CH2M HILL Honolulu	10/00: surface water. 14 sta in Manuwai Canal & ocean; 3 reference stations at Kaneohe YC 20 sta sampled for sediments; Also tilapia fish tissue Organics and metals	Much information available in report. Water quality data attached. Extensive Quality Assurance.	Review final when available, Future Monitoring.
Draft Remedial Investigation Report for Kumumauu Canal, Hickam AFB, Oahu US Air Force, May 2001 and Final Decision Document to Support No Further Response Action Planned (NFRAP) for the Kumumauu Canal, April 2002	CH2M HILL Honolulu	Comparable data to Manuwai Canal report. Used same reference site at Kaneohe YC		Review final when available , Future Monitoring.

Source: Wendy Wiltse, EPA

7. Other Data Sources

Nawiliwili Bay Watershed

These data were not used to aid listing/delisting decisions because the data were not accompanied by QA/QC plans and written and photographic documentation as required by HIDOH's listing/delisting criteria. Additionally, HIDOH has deemed Hydrolab data insufficient for the 2002 303(d) listing purposes. Cross-calibration problems with the instrument, difficulty with accuracy of nutrient probes and other technical problems have delayed the adoption of this instrument as a HIDOH approved method for measurement of conventional pollutants. This instrument is currently being field-tested by Department of Health's Clean Water Branch.

Waimanalo Stream

Data from DeCarlo's study showed preliminary trends in dissolved oxygen content, pH and temperature, which may indicate a eutrophic state of the stream system; however, data were limited to only one month and were not presented in a way that allowed for calculation of the percent saturation of dissolved oxygen. Therefore, this stream is recommended for future monitoring (see APPENDIX C). Monitoring should occur over time with at least two sampling sites (upper and lower). Because the data were not distributed over time and space as the HIDOH listing/delisting criteria require, they were not used for listing/delisting purposes. Data collected by Ed Laws for the Waimanalo Total Maximum Daily Load development was also not utilized for listing/delisting purposes since the data was limited to mainly storm events and therefore would be biased.

Waikapu Stream

Data did not include pictures and narrative information about the site. Also, the sample size was less than ten and the sampling was completed at only one site on the lower portion of the stream. However, data may be utilized in combination with Clean Water Branch data for future listing/delisting decisions provided that narrative and photographic information is supplied.

Heeia Stream

Sufficient data and QA/QC procedures were not presented at this time to utilize this data for listing/delisting decisions.

West Maui

Data contained in Dollar's reports included samples from five locations along the West Maui coast, 2 locations in Maalaea Bay, one location on Molakai's south shore and a leeward Oahu open ocean station (Dollar et al. 1999; 2001). Samples were taken at varying depths at the same locations on four dates. When determining whether a sufficient sample size was present for making a listing/delisting decision, Environmental Planning Office staff determined that the samples from the same site on the same day but at different depths should be considered a single sample since they were not distributed across the waterbody or time. Therefore, sample sizes were not sufficient for listing/delisting determinations at this time. Future monitoring is recommended.

Fish Consumption Advisories

Documentation from fish consumption advisories for the Ala Wai Canal for organochlorine pesticides and lead and Pearl Harbor for Polychlorinated Biphenyls (PCBs) indicate probable risks to human health from these pollutants. [HAR 11-54-04(b)(2)].

HAWAII'S 2002 303(D) LIST

The 2002 303(d) List includes the waterbodies on EPA's revised 1998 List of Impaired Waterbodies minus two stations plus an additional twenty-three new waterbodies: seven streams and sixteen coastal waters. Banyan's Surfing Area was delisted for enterococci based on HIDOH Clean Water Branch data, and the listing for Kawela Beach station was incorporated into Kawela Bay station since HIDOH documentation showed they were the same station. Station numbers and names are based on the Hawaii Stream Assessment (CWRM and NPS 1990). A few typographical errors were also corrected in this version. Waterbodies were prioritized as High, Medium or Low for Total Maximum Daily Load (TMDL) development. High, medium or low priorities were assigned to each water based on number of parameters listed and severity of exceedances.

TMDL Priorities:

Currently, TMDLs have been established for the Ala Wai Canal, Waimanalo Stream and Kawa Stream. TMDLs for Kaneohe, Waikele and Kapaa streams are scheduled for completion in 2002. DOH contractors also recently began the development process for TMDLs in Nawiliwili, Huleia, Aiea, Waiawa, Waimano (Tributary to Waiawa), and Kapakahi streams. TMDLs will be calculated for three parameters (TSS, nitrogen and phosphorous) for each of these streams; the estimated completion year for these TMDLs is 2005. Streams in the Hilo Bay Watershed are the highest priority for future TMDL development; a contract for development of TMDLs for Alenaio Stream (Tributary to Wailoa), Waiakea Stream (Tributary to Wailoa), Wailoa River, Wailuku River and Honolii stream system will begin in 2003 and should be completed within 2 years of contract initiation. Depending on availability of funding and community partnerships, DOH contractors will also begin development of TMDLs for at least one of the following waterbodies in 2004: the Hanalei River, Kaelepulu Stream System or Kiikii Stream System.

The 2002 List appears in TABLE 7; all changes are shaded throughout the List. Waters previously listed by EPA on the basis of old data or visual assessment will remain on the list until there is sufficient data to justify delisting. Waters are prioritized on the 303(d) list as High (H), Medium (M) or Low (L) priority for Total Maximum Daily Load (TMDL) development. Factors considered for prioritization include the following:

1) severity of pollution (number of pollutants listed and degree that levels of pollutants exceed the standard),
2) uses of the waters,
3) type and location of waterbody,
4) degree of public interest,
5) vulnerability of particular waters,
6) importance of particular waters,
7) agency limitations (including funding) and
8) TMDLs currently under development.

TABLE 7: 2002 303(d) List for Hawaii

- Newly listed waters are highlighted in the table, as are any changes to the parameters for previously listed waters.
- The "Standard" column explains whether waters listed based on numeric assessments were found to violate numeric water quality standards in the wet season (November-April), dry season (April-November), "2%" of the time, "10%" of the time, or narrative standards. Estuaries do not have separate standards for wet and dry season and thus state "overall."
- Asterisks (*) in the "Standard" column indicate that 2002 data upheld the prior listing.
- For the purposes of this report, listed waterbodies were sorted by island, then into the streams category (salinity chronically below 0.5 ppt) or the coastal category (above 0.5 ppt). The waterbodies were then sorted alphabetically.

HAWAII

STREAMS						
Listed Waterbody	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
Aamakao Stream	Aamakao Stream	turbidity	numeric assessment	8-1-12	dry	L
Alenaio Stream	Alenaio Stream (Wailoa tributary)	nutrients	visual assessment			M
Hakalau Stream	Hakalau Stream	nutrients turbidity	visual assessment	8-2-32		M
Honolii Stream	Honolii Stream	nutrients turbidity	visual assessment	8-2-56		M
Kaieie Stream	Kaieie Stream	nutrients	visual assessment	8-2-49		M
Kolekole Stream	Kolekole Stream	nutrients turbidity	visual assessment	8-2-33		M
Niulii Stream	Niulii Stream	turbidity	numeric assessment	8-1-13	dry	L
Waiakea Stream	Waiakea Stream (Wailoa tributary)	nutrients	visual assessment			M
Waikama Stream	Waikama Stream	turbidity	numeric assessment	8-1-14	wet	L
Wailoa Stream	Wailoa Stream	nutrients turbidity	visual assessment	8-2-61		M
Wailuku Stream	Wailuku Stream	nutrients ~~turbidity~~	visual assessment	8-2-60		L
Wainaia Stream	Wainaia Stream	turbidity	numeric assessment	8-1-09	wet	L

HAWAII (continued)

COASTAL						
Listed Waterbody	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
~~Banyans Surfing Area~~	~~Banyans Surfing Area station~~	~~enterococci~~	~~numeric assessment~~	~~001235~~	~~wet~~	~~L~~
Hapuna Beach	Hapuna Beach station	chlorophyll a turbidity	numeric assessment	001200	wet wet	L
Hilo Bay	Bay inshore of Breakwater and near shore waters from Wainaku to Paukaa	nutrients turbidity	visual assessment, prior listing			~~L~~ M
Hilo Bay	Boat Landing station	chlorophyll a	numeric assessment	001106	wet/dry	~~L~~ M
Hilo Bay	Canoe Beach station	enterococci turbidity	numeric assessment	001138	wet wet*/dry*	M
Hilo Bay	Exit of Ice Pond station	phosphorous enterococci	numeric assessment	001102	wet/dry wet	M
Hilo Bay	Lighthouse station	chlorophyll a turbidity enterococci	numeric assessment	001107	wet/dry wet wet	M
Hilo Bay	Offshore station	chlorophyll a turbidity ~~nitrogen~~ nitrate-nitrite ammonium	numeric assessment	001141	wet/dry dry ~~wet/dry~~ wet/dry wet/dry	~~L~~ M
Hilo Bay	Honolii Cove station	enterococci turbidity	numeric assessment	001110	wet/dry wet/dry	~~L~~ M
Leleiwi Beach Park	Leleiwi Beach Park station	Phosphorous enterococci	numeric assessment	001121	Dry wet/dry	M
Kailua Bay	Kailua Pier A-1 station	phosphorous	numeric assessment	001205	wet	L
Kawaihae Harbor/ Pelekane Bay	Kawaihae Harbor/ Pelekane Bay	turbidity				L
Kawaihae Harbor/ Pelekane Bay	Spencer Park Beach station	turbidity chlorophyll a	numeric assessment	001225	wet wet	L

HAWAII (cont.)

COASTAL (continued)						
Listed Waterbody	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
Kealakekua Bay	Kealakekua Bay - off curio stand station	turbidity	numeric assessment	001211	dry	L
Kolekole Beach	Kolekole Gulch station	enterococci turbidity	numeric assessment	001118	wet/dry wet/dry	L
Magic Sands Beach	Magic Sands Beach station	chlorophyll a turbidity	numeric assessment	001215	wet/dry dry	L
Pacific Ocean	Vacationland Station	turbidity	numeric assessment	1142	dry	L
Pualaa Beach Park	Pualaa Beach Park station	enterococci	numeric assessment	001143	dry	L
Puhi Bay	Puhi Bay #3 station	turbidity chlorophyll a	numeric assessment	001130	dry wet/dry	L
Richardson Ocean Center	Richardson Ocean Center station	chlorophyll a turbidity	numeric assessment	001136	wet/dry dry	L
Wailoa River	Wailoa River Boat Ramp station	enterococci	numeric assessment	001132	wet/dry	M

KAUAI

STREAMS						
Listed Waterbody	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
Hanalei River	Hanalei River	turbidity	visual assessment	2-1-19		M
Hanamaulu Stream	Hanamaulu Stream	turbidity	visual assessment	2-2-12		M
Hanapepe River	Hanapepe River	turbidity	visual assessment	2-3-07		M
Huleia Stream	Huleia Stream	turbidity	visual assessment	2-2-15		H
Kapaa Stream	Kapaa Stream	turbidity	visual assessment	2-2-04		M
Nawiliwili Stream	Nawiliwili Stream	turbidity	visual assessment	2-2-13		H
Uhelekawawa Stream	Uhelekawawa Stream	turbidity	visual assessment			M
Waimea River	Waimea River	turbidity	visual assessment	2-4-04s		M

COASTAL						
Listed Waterbody	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
Anini Beach	Anini Park Pavilion Station	turbidity	numeric assessment	000801	dry	L
Hanalei Bay	Hanalei Bay Landing station	enterococci	numeric assessment	000804	wet*/dry*	L
Hanalei River	Hanalei River (Weke Rd) station	enterococci	wet/dry	000839	wet*/dry*	H
Hanamaulu Bay	Hanamaulu Bay	turbidity	visual assessment			L
Hanamaulu Bay	Hanamaulu Beach (middle) station	enterococci	numeric assessment	000806	wet*/dry*	L
Hanapepe Bay	Bay from breakwater to shore and nearshore waters to 30' from Puolo Point to Paakehi Point	nutrients	visual assessment, prior listing			L
Hanapepe Bay	Port Allen Pier station	nitrogen turbidity chlorophyll a	numeric assessment	000821	wet*/dry* dry* wet*/dry*	L
Kalihiwai Bay Beach	Kalihiwai Bay Beach station	enterococci	numeric assessment	000811	wet	L
Koloa Landing	Koloa Landing station	enterococci	numeric assessment	000837	wet	L

KAUAI (continued)

COASTAL (continued)						
Listed Waterbody	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
Nawiliwili Bay	Bay from breakwater to shore	turbidity nutrients	visual assessment, prior listing			H
Nawiliwili Bay	Nawiliwili Harbor- Coast Guard Pier station	enterococci	numeric assessment	000817	wet	M
Nawiliwili Bay	Kalapaki Beach (middle) station	enterococci	numeric assessment	000809	wet	L
Nawiliwili Bay	Nawiliwili Bay offshore embayment station	~~nitrogen~~ nitrate-nitrite ammonium turbidity chlorophyll a	numeric assessment	000881	~~wet/dry~~ wet/dry wet/dry dry wet/dry	M
Wailua River	Wailua River station	enterococci	numeric assessment	000822	wet/dry	M
Waimea Bay	Nearshore waters to 18’ from Kekaha Oomano Pt. to point 1.5 miles southeast of Mahinaui Stream	suspd. solids turbidity	visual assessment, prior listing			L
Waimea Bay	Waimea Bay Beach (near River) station	enterococci	numeric assessment	000823	wet/dry	L

MAUI

STREAMS						
Listed Waterbody	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
Honokowai Stream	Honokowai Stream	turbidity	visual assessment	6-1-07		M
Iao Stream	Iao Stream	turbidity trash	visual assessment	6-2-09		M
Kahana Stream	Kahana Stream	turbidity	visual assessment	6-1-08		M
Kahoma Stream	Kahoma Stream	turbidity	visual assessment	6-1-05		M
Makamakole Stream	Makamakole Stream	turbidity	numeric assessment	6-2-06	dry	L
Maliko Stream	Maliko Stream	turbidity	numeric assessment	6-3-01	wet	L
Ohia Stream	Ohia Stream	nutrients turbidity trash	visual assessment	6-4-12		M
Ukumehame Stream	Ukumehame Stream	turbidity	numeric assessment	6-1-01	dry	L
Waihee Stream	Lower Waihee Stream	nutrients	visual assessment	6-2-07		M

COASTAL						
Listed Waterbody	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
Baldwin Beach Park	H.A. Baldwin Park Station	turbidity	numeric assessment	000689	wet/dry	L
Hanakaoo Beach Park	Hanakaoo Beach Station	turbidity	numeric assessment	000693	wet/dry	L
Honomanu Bay	Honomanu Bay station	enterococci	numeric assessment	000653	wet/dry	L
Hookipa Beach Park	Hookipa Station	turbidity	numeric assessment	000688	dry	L
Kahekili Beach Park	Airport (Kahekili) Beach Station	turbidity	numeric assessment	000695	wet/dry	L
Kahului Bay	Bay inshore of breakwater	nutrients turbidity	visual assessment, prior listing			L
Kahului Bay	Hukilau Hotel Station	turbidity	numeric assessment	000654	wet/dry	L
Kahului Bay	Kahului Bay station	turbidity chlorophyll a total nitrogen nitrate-nitrite ammonium	numeric assessment	000680	wet*/dry* wet*/dry* wet~~/dry~~ wet*/dry* wet*/dry*	L

MAUI (continued)

COASTAL (continued)						
Listed Waterbody	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
Kanaha Beach	Kaa Shoreline station	phosphorous turbidity chlorophyll a	numeric assessment	000655	dry wet*/dry* wet/dry	L
Kanaha Beach	Kanaha Beach Park station	phosphorous turbidity chlorophyll a	numeric assessment	000677	dry wet*/dry* wet/dry	L
Kihei Coast (formerly listed as West Maui, Kihei or South)	Nearshore waters to 60' from Kihei North - Kalama Beach	nutrients turbidity suspd. solids	visual assessment, prior listing			M
Kihei Coast	Kalama Beach station	turbidity chlorophyll a phosphorous	numeric assessment	000679	dry wet/dry wet/dry	M
Kihei Coast	Kamaole Beach #1 station	chlorophyll a turbidity	numeric assessment	000681	wet/dry wet*/dry	M
Kihei Coast	Kamaole Beach #2 station	turbidity chlorophyll a	numeric assessment	000682	wet*/dry* wet/dry	M
Kihei Coast	Kamaole Beach #3 station	chlorophyll a turbidity	numeric assessment	000683	wet/dry wet/dry*	M
Kihei Coast	Keawekapu Beach station	turbidity chlorophyll a	numeric assessment	000685	wet*/dry wet/dry	M
Kihei Coast	Kihei North station	chlorophyll a turbidity phosphorous	numeric assessment	000671	wet/dry wet dry	M
Kihei Coast	Kihei South station	phosphorous chlorophyll a turbidity	numeric assessment	000676	wet/dry wet/dry wet*/dry*	M

MAUI (cont.)

COASTAL (cont.)						
Listed Waterbody	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
Kihei Coast	Ulua Beach station	chlorophyll a turbidity	numeric assessment	000686	wet/dry* wet/dry*	M
Launiupoko Wayside Park	Launiupoko Wayside Park Station	turbidity	numeric assessment	000694	wet/dry	L
Maalaea Bay and Harbor	Maalaea Bay and Harbor	Turbidity	visual assessment			L
Maalaea Bay and Harbor	Maalaea Condo station	chlorophyll a turbidity	numeric assessment	000687	wet/dry wet*/dry*	L
Maalaea Bay and Harbor	Maalaea Small Boat Harbor station	turbidity chlorophyll a	numeric assessment	000659	dry dry	L
Mai Ponia Oe Iau Park	Mai Ponia Oe Iau Station	turbidity	numeric assessment	000702	dry	L
Makena Beach	Makena Beach station	chlorophyll a turbidity	numeric assessment	000661	dry dry/wet	L
Olowalu Beach	Teen Challenge (MI 14) Station	turbidity	numeric assessment	000697	dry	L
Paia Bay	Paia Outfall Station	turbidity	numeric assessment	000664	wet/dry	L
Puunoa Point	Puunoa (Baby) Beach Station	turbidity	numeric assessment	000696	dry	L
Spreckelsville Beach	Spreckelsville Beach Station	turbidity	numeric assessment	000700	wet/dry	L
Ukumehame Beach	Ukumehame Beach station	enterococci	numeric assessment	000698	wet	L
Wailea Beach	Wailea Beach Station	turbidity	numeric assessment	000691	wet/dry	L
West Maui Coast- North	Nearshore waters to 60' from Honolua - Lahaina	nutrients turbidity suspd. solids	visual assessment, prior listing			M
West Maui Coast- North	Olowalu Shore Front station	chlorophyll a turbidity	numeric assessment	000663	dry wet*/dry*	M
West Maui Coast- North	Lahaina Small Boat Harbor station	turbidity	numeric assessment	000657	dry	M
West Maui Coast- North	Mala Wharf station	enterococci phosphorous turbidity chlorophyll a	numeric assessment	000662	wet* wet/dry wet/dry wet/dry	M

MAUI (cont.)

COASTAL (cont.)						
Listed Waterbody	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
West Maui Coast- North	Waihikuli Beach station	chlorophyll a turbidity	numeric assessment	000678	wet/dry wet/dry	M
West Maui Coast- North	Sheraton Kaanapali Shoreline station	chlorophyll a turbidity	numeric assessment	000666	wet/dry wet/dry*	M
West Maui Coast- North	Hale Onoloa Condominium Shore station	chlorophyll a turbidity phosphorous	numeric assessment	000651	wet/dry wet/dry dry	M
West Maui Coast- North	Mahinahina Condo Shoreline station	turbidity chlorophyll a phosphorous	numeric assessment	000660	wet/dry wet/dry Dry	M
West Maui Coast- North	Fleming Beach station	turbidity chlorophyll a	numeric assessment	000650	wet*/dry* wet/dry	M
West Maui Coast- North	Fleming Beach North station	turbidity chlorophyll a	numeric assessment	000674	wet*/dry* wet/dry	M

MOLOKAI

COASTAL						
Listed Water Body	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
Kawaaloa and Moomomi Bays	Kawaaloa and Moomomi Bays	turbidity	visual assessment			L
South Molokai Coast	Nearshore waters to 18’ from southwest point - Waialua	nutrients turbidity suspd. solids	prior listing			L

OAHU

STREAMS						
Listed Water Body	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
Aiea Stream	Aiea Stream	turbidity trash	visual assessment	3-4-03		H
Anahulu Stream	Anahulu Stream	nutrients turbidity	visual assessment	3-6-08s		M
Halawa Stream	Halawa Stream	nutrients turbidity	visual assessment	3-4-02		H
Kaaawa Stream	Kaaawa Stream	nutrients turbidity	visual assessment	3-1-19		M
Kaelepulu Stream	Kaelepulu Stream/Enchanted Lakes	nutrients turbidity	visual assessment	3-2-14		H
Kahaluu Stream	Kahaluu Stream	nutrients turbidity	visual assessment	3-2-07s		M
Kahawainui Stream	Kahawainui Stream	nutrients turbidity	visual assessment	3-1-07		M
Kalihi Stream	Kalihi Stream	nutrients turbidity trash	visual assessment	3-3-11		M
Kamooalii Stream (Tributary to Kaneohe Stream)	Kamooalii Stream	nutrients turbidity	visual assessment			M
Kaneohe Stream	Kaneohe Stream	nutrients turbidity dieldrin	visual assessment visual assessment narrative assessment	3-2-10		H
Kapaa Stream	Kapaa Stream/Kawainui Marsh/Kawainui Stream	nutrients turbidity suspd. solids metals	visual assessment	2-2-04		H
Kapakahi Stream	Kapakahi Stream	nutrients turbidity trash	visual assessment			H

OAHU (continued)

STREAMS (continued)						
Listed Water Body	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
Kapalama Stream	Kapalama Stream	nutrients turbidity trash	Visual assessment	3-3-10		M
Kaupuni Stream	Kaupuni Stream	nutrients turbidity trash	visual assessment	3-5-05		M
Kawa Stream	Kawa Stream	nutrients turbidity suspd. solids	visual assessment	3-2-11		H (TMDLs approved in 2002)
Keaahala Stream	Keaahala Stream	nutrients turbidity trash	visual assessment	3-2-09		M
Kiikii Stream	Kiikii Stream	nutrients turbidity	visual assessment	3-6-06s		M
Makiki Stream	Makiki Stream (Jack in the Box) station	phosphorous nitrogen	numeric assessment	ALWS06	dry dry	M
Manoa Stream	Manoa Stream	nutrients turbidity dieldrin total chlordane	visual assessment visual assessment narr.&num. assmt. assessment	2-1-13		M
Maunawili Stream	Maunawili Stream (Kawainui Marsh tributary)	nutrients turbidity trash	visual assessment	3-2-13		M
Moanalua Stream	Moanalua Stream	nutrients turbidity trash	visual assessment	3-3-12		M
Nuuanu Stream	Nuuanu Stream	nutrients trash turbidity dieldrin total chlordane	visual assessment visual assessment numeric assessment narrative assessment	3-3-09	 wet	M

OAHU (cont.)

STREAMS (cont.)						
Listed Water Body	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
Palolo Stream	Palolo Stream	trash	visual assessment			M
Paukauila Stream	Paukauila Stream	nutrients turbidity	visual assessment	3-6-07s		M
Waiawa Stream	Waiawa Stream	nutrients turbidity trash	visual assessment	3-4-06		H
Waihee Stream	Waihee Stream	nutrients	visual assessment	6-2-07		M
Waikele Stream	Waikele Stream	nutrients turbidity	visual assessment	3-4-10		H
Waimalu Stream	Waimalu Stream	turbidity	visual assessment	3-4-05		H
Waimanalo Stream	Waimanalo Stream	nutrients turbidity suspd. solids	visual assessment	3-2-15		~~H~~ L (TMDLs approved 2001)
Waimano Stream (Tributary to Waiawa)	Waimano Stream	turbidity	visual assessment			M

COASTAL						
Listed Water Body	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
Ala Wai Canal and Harbor	Ala Wai Canal and Boat Harbor	nutrients pathogens metals turbidity suspd. solids organochlorine pesticides lead	visual assessment, prior listing fish consumption advisory			H- nutrients M - others
Ala Wai Canal and Harbor	Ala Wai Canal (Diamond Head end) station	enterococci turbidity nitrogen phosphorous chlorophyll a	numeric assessment	ALWS01	wet*/dry* ~~dry~~ overall* ~~dry~~ overall* ~~dry~~ overall* ~~dry~~ overall*	L

OAHU (cont.)

COASTAL (continued)						
Listed Water Body	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
Ala Wai Canal and Harbor	Ala Moana Bridge station	enterococci nitrogen turbidity phosphorous chlorophyll a	numeric assessment	000320	wet/dry ~~wet/dry~~ overall* ~~wet/dry~~ overall* ~~wet/dry~~ overall* ~~wet/dry~~ overall*	L
Manoa Stream	Manoa Stream Fork station	turbidity nitrogen fecal coliform	numeric assessment	ALWS03	~~dry~~ overall* ~~dry~~ overall* wet	M
Ala Wai Canal and Harbor	Manoa-Palolo Stream mouth station	chlorophyll a nitrogen phosphorous turbidity	numeric assessment	ALWS05	~~dry~~ overall* ~~dry~~ overall* ~~dry~~ overall* ~~dry~~ overall*	L
Ala Wai Canal and Harbor	Manoa-Palolo Stream (KHS) station	fecal coliform nitrogen phosphorous turbidity chlorophyll a	numeric assessment	ALWS04	wet ~~dry~~ overall* ~~dry~~ overall* ~~dry~~ overall* overall	M
Ala Wai Canal and Harbor	Palolo Stream Fork station	nitrogen turbidity fecal coliform	numeric assessment	ALWS02	~~dry~~ overall* ~~dry~~ overall* wet	M
Ala Wai Canal and Harbor	McCully St. Bridge station	enterococci	numeric assessment	000321	wet/dry	L
Ewa Beach Park	Ewa Beach Park station	phosphorous nitrogen chlorophyll a turbidity	numeric assessment	000189	dry wet/dry wet/dry wet/dry	L
Gray's Beach	Gray's Beach station [Halekulani]	nitrogen turbidity chlorophyll a	numeric assessment	000159	wetdry wet/dry wet/dry	L

OAHU (cont.)

COASTAL (cont.)						
Listed Water Body	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
Hanauma Bay	Hanauma Bay	trash	visual assessment			L
Hanauma Bay	Hanauma Bay (oceanic) station	chlorophyll a nitrite-nitrate ammonium ~~nitrogen~~	numeric assessment	000444	dry* dry dry ~~wet/dry~~	L
Hanauma Bay	Hanauma Bay station	turbidity nitrogen chlorophyll a	numeric assessment	000201	wet/dry wet/dry dry	L
Hawaii Kai	Hawaii Kai station	enterococci	numeric assessment	000229	wet*	L
Honolulu Harbor and Shore Areas	Nearshore waters to 30' from 1 mile northwest of Honolulu Harbor/Sand Island channel to Waikiki Beach	nutrients pathogens metals turbidity suspd. solids	prior listing			L
Honolulu Harbor and Shore Areas	Ala Moana Park (Diamond Head end) station	enterococci	numeric assessment	000154	wet	L
Honolulu Harbor and Shore Areas	Ala Moana Park Center station	nitrogen turbidity chlorophyll a	numeric assessment	000153	wet/dry wet/dry wet/dry	L
Honolulu Harbor and Shore Areas	Kewalo Basin	nutrients suspd. solids turbidity trash	visual assessment, prior listing			L
Honolulu Harbor and Shore Areas	Kewalo Basin station	nitrogen phosphorous turbidity chlorophyll a	numeric assessment	000361	dry dry dry dry	L
Honolulu Harbor and Shore Areas	Honolulu Waterfront-Aloha Tower	turbidity trash	visual assessment			L

OAHU (cont.)

COASTAL (cont.)						
Listed Water Body	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
Honolulu Harbor and Shore Areas	Sand Island Point #2	turbidity nitrogen chlorophyll a	numeric assessment	000165	dry dry dry	L
Honolulu Harbor and Shore Areas	Sand Island Point #3	turbidity nitrogen chlorophyll a	numeric assessment	000165	dry dry dry	L
Lanikai Beach	Lanikai Beach station	enterococci	numeric assessment	000194	wet*	L
Kaelepulu Stream	Kaelepulu Stream station	enterococci nitrogen phosphorous turbidity chlorophyll a	numeric assessment	000302	wet/dry wet/dry wet/dry wet/dry wet/dry	M
Kahana Bay	Nearshore waters to 30’ from Mahie Point to a point one mile north of Kahana Bay station	suspd. solids turbidity	visual assessment, prior listing			L
Kahana Bay	Kahana Park (1) station	nitrogen enterococci turbidity phosphorous	numeric assessment	000178	wet/dry wet*/dry* wet/dry wet/dry	L
Kahanamoku Lagoon-Diamond Head	Kahanamoku Lagoon- Diamond Head station	enterococci	numeric assessment	000157	wet	L
Kailua Beach	Kailua Beach Park station	enterococci nitrogen chlorophyll a phosphorous turbidity	numeric assessment	000193	wet wet/dry wet/dry wet/dry wet/dry	L
Kailua Beach	Oneawa Beach station	chlorophyll a phosphorous nitrogen turbidity	numeric assessment	000304	wet/dry wet wet/dry wet/dry	L
Kaiona Beach	Kaiona Beach station	enterococci	numeric assessment	000227	wet*	L

OAHU (cont.)

COASTAL (cont.)						
Listed Water Body	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
Kaneohe Bay	Nearshore waters at mouths of Kaneohe and Kawa streams	nutrients turbidity suspd. solids	prior listing			H
Kaneohe Bay	Kaneohe Bay (Central Region) station	total nitrogen nitrate-nitrite ammonium turbidity chlorophyll a	numeric assessment	000403	~~wet~~/dry* wet*/dry* wet/dry wet/dry wet*/dry*	L
Kaneohe Bay	Kaneohe Bay (Northern Region) station	total nitrogen nitrate-nitrite ammonium turbidity chlorophyll a	numeric assessment	000402	~~wet~~/dry* wet*/dry* wet/dry wet/dry wet*/dry*	L
Kaneohe Bay	Kaneohe Bay (Southern Region) station	chlorophyll a turbidity total nitrogen nitrate-nitrite ammonium enterococci	numeric assessment	000401	wet*/dry* wet/dry* ~~wet~~/dry* wet*/dry* wet*/dry* wet	L
Kaneohe Bay	Kokokahi Pier	enterococci nitrogen chlorophyll a turbidity phosphorous	numeric assessment	000191	wet wet/dry wet/dry wet/dry dry	L
Kaneohe Bay	Kaneohe Beach Park station	nitrogen turbidity chlorophyll a phosphorous	numeric assessment	000190	wet/dry wet/dry wet/dry wet/dry	L

OAHU (cont.)

COASTAL (cont.)						
Listed Water Body	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
Kaneohe Bay	Heeia Kea Small Boat Harbor station	enterococci nitrogen chlorophyll a	numeric assessment	000362	wet* wet/dry wet/dry	L
Kawela Bay	Kawela Bay station	nitrogen chlorophyll a phosphorous turbidity enterococci	numeric assessment	000173	wet/dry wet/dry wet/dry wet/dry wet	L
~~Kawela Bay~~	~~Kawela Beach station~~	~~enterococci~~	~~numeric assessment~~	~~000173~~	~~wet~~	~~L~~
Keehi Lagoon	Keehi Lagoon waters and nearshore waters to 30' from lagoon mouth to Pearl Harbor	nutrients turbidity suspd. solids	prior listing			L
Keehi Lagoon	Keehi Lagoon Point X	enterococci nitrogen chlorophyll a phosphorous	numeric assessment	000342	wet/dry wet/dry wet/dry wet/dry	L
Kualoa Beach	Kualoa Beach Park Station	enterococci	numeric assessment	000208	wet	L
Kuhio Beach	Kuhio Beach station	enterococci	numeric assessment	00161	wet*	L
Laie Bay	Laie Bay station	chlorophyll a nitrogen phosphorous turbidity	numeric assessment	000175	wet/dry wet/dry wet/dry wet/dry	L
Makaha Beach	Makaha station	nitrogen chlorophyll a turbidity	numeric assessment	000185	wet/dry wet/dry wet	L

OAHU (cont.)

COASTAL (cont.)						
Listed Water Body	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
Mamala Bay	Mamala Bay (oceanic) station	nitrogen chlorophyll a	numeric assessment	000442	wet/dry* wet/dry*	L
Mamala Bay	Mamala Bay (Sand Island offshore) station	nitrogen chlorophyll a enterococci	numeric assessment	000441	wet/dry* wet/dry* wet	L
Maunalua Bay	Maunalua Bay (open coastal) station	total nitrogen nitrite-nitrate ammonium chlorophyll a	numeric assessment	000443	wet~~/dry~~ wet/dry* wet/dry* wet/dry	L
Pearl Harbor	Harbor waters and nearshore waters to 30' from Keehi Lagoon to Oneula Beach	nutrients turbidity suspd. solids polychlorinated biphenyls (PCBs)	prior listing prior listing prior listing fish consump. advisory			H
Pearl Harbor	Blaisdell Park	nitrogen chlorophyll a turbidity phosphorous	numeric assessment	000223	wet/dry wet/dry wet/dry wet	H
Pokai Bay	Pokai Bay (oceanic) station	nitrogen chlorophyll a	numeric assessment	000452	dry*	L
Pokai Bay	Pokai Bay (open coastal) station	nitrogen chlorophyll a	numeric assessment	000451	wet/dry*	L
Public Bath Beach	Public Bath Beach station	nitrogen chlorophyll a turbidity	numeric assessment	000162	wet/dry wet/dry wet/dry	L
Salt Lake	Salt Lake	turbidity trash	visual assessment			M
Sandy Beach Point	Sandy Beach Point #1 station	nitrogen turbidity chlorophyll a	numeric assessment	000200	wet/dry wet/dry wet/dry	L

OAHU (cont.)

COASTAL (cont.)						
Listed Water Body	**Geographic Scope of Listing**	**Pollutant(s)**	**Basis for Listing**	**Station ID**	**Standard**	**Priority**
Waialae-Kahala Beach	Waialae-Kahala Beach station	enterococci	numeric assessment	000214	wet*	L
Waialua/Kaiaka Bays	Nearshore waters to 60' from Puaena Point to a point 1.5 miles west of Kaiaka Point	nutrients turbidity susp. solids	visual assessment, prior listing			L
Waialua/Kaiaka Bays	Kaiaka Bay	enterococci total nitrogen nitrite-nitrate ammonium chlorophyll a turbidity	numeric assessment	000170	wet* wet~~/dry~~ wet/dry* wet/dry* wet/dry wet/dry*	L
Waialua/Kaiaka Bays	Haleiwa Beach Park station	phosphorous nitrogen chlorophyll a	numeric assessment	000171	wet/dry* wet/dry* wet/dry*	L
Waimanalo Bay	Waimanalo Bay Station	enterococci	numeric assessment	000196	wet	L
Bellows Beach	Bellows Beach (Waimanalo Stream mouth) station	enterococci	numeric assessment	Bellows5	dry	L
Bellows Beach	Bellows Beach (north runway) station	enterococci	numeric assessment	Bellows4	wet	L

Explanation of Major Changes and Omissions

All listing/delisting changes were based on HIDOH Clean Water Branch data. For coastal stations these data were extracted from STORET, EPA's national database.

Hawaii - Streams

1) Aamakao Stream was listed for turbidity based on recent combined data that showed exceedance of the dry season turbidity standard. Examination of the raw data showed that most of the dry season samples exceeded the dry season turbidity standard.
2) Kolekole Stream was not delisted for turbidity since the geometric mean of the limited data available was very close to the standard and many of the dry season samples exceeded the standard. This stream should be included in future monitoring plans.
3) Niulii Stream was listed for turbidity based on recent combined data that showed exceedance of the dry season turbidity standard. Examination of the raw data showed that most of the dry season samples exceeded the dry season turbidity standard.
4) Waikama Stream was listed for turbidity based on recent combined data that showed exceedance of the wet season turbidity standard.
5) The parameters listed for Wailuku Stream were changed from *nutrients and turbidity* to only *nutrients* since the geometric mean of the limited data available was well below the dry season standard, the majority of dry season samples were below the dry season standard and all of the wet season samples were below the wet season standard. This stream should be included in future monitoring plans.
6) Wainaia Stream was listed for turbidity based on recent, limited data that showed exceedance of the wet season turbidity standard by a factor of two.

Hawaii - Coastal

1) Banyans Surfing Area station was delisted for enterococci based on recent data that showed no exceedance of the enterococci criteria for recreational waters.
2) Turbidity was added as a parameter for the Hilo Bay (Canoe Beach) Station based on recent data that showed exceedances of both the wet and dry season standards for turbidity.
3) Enterococcus was added as a parameter for the Hilo Bay (Exit of Ice Pond) Station, located in Hilo Bay, based on recent data that showed exceedance of the wet season standard for enterococcus.
4) Enterococcus was added as a parameter for the Hilo Bay (Lighthouse) Station based on recent data that showed exceedance of the wet season standard for enterococcus.
5) Recent data showed that the Hilo Bay (Offshore) station does not exceed the total nitrogen standard so the exceedances were more clearly defined to show exceedances of the wet and dry criteria for nitrate-nitrite and ammonium rather than simply nitrogen.
6) Turbidity was added as a parameter for Honolii Cove station since recent data showed exceedances of both the wet and dry season criteria for turbidity.
7) Enterococcus was added as a parameter for the Leleiwi Beach Park Station based on recent data that showed exceedances of both the wet and dry season standards for enterococcus.

8) The Vacationland Station was listed for turbidity based on recent data that showed exceedance of the dry season standard for turbidity.

Kauai - Coastal

1) Anini Park Pavilion Station was listed for turbidity based on recent data that showed exceedance of the dry season turbidity standard.
2) Recent data showed that the Nawiliwili Bay offshore embayment station does not exceed the total nitrogen standard so the exceedances were more clearly defined to show exceedances of the wet and dry criteria for nitrate-nitrite and ammonium rather than simply nitrogen.

Maui – Streams

1) Honokohau Stream was not listed due to the fact that dry season raw data revealed that only one of the samples collected during the dry season exceeded the dry season turbidity standard. This stream should be included in future monitoring plans.
2) Makamakaole Stream was listed for turbidity based on recent combined data that showed exceedance of the dry season turbidity standard. Examination of the raw data showed that all dry season data exceeded the dry season turbidity standard.
3) Maliko Stream was listed for turbidity based on recent, limited data that showed exceedance of the wet season turbidity standard by a factor of 2.
4) Ukumehame Stream was listed for turbidity based on recent combined data that showed exceedance of the dry season turbidity standard. Examination of the raw data showed that all dry season data exceeded the dry season turbidity standard and the overall geometric mean of both wet and dry data was near but below the wet season standard.

Maui – Coastal

1) H.A. Baldwin Park Station was listed for turbidity based on recent data that showed exceedances of both the wet and dry season standards for turbidity.
2) Hanakaoo Beach Station was listed for turbidity based on recent data that showed exceedances of both the wet and dry season standards for turbidity.
3) Hookipa Station was listed for turbidity based on recent data that showed exceedance of the dry season standards for turbidity.
4) The Airport (Kahekili) Beach Station was listed for turbidity based on recent data that showed exceedances of both the wet and dry season standards for turbidity.
5) The Kahului Bay (Hukilau Hotel) Station was listed for turbidity based on recent data that showed exceedances of both the wet and dry season standards for turbidity.
6) Recent data showed that the Kahului Bay station does not exceed the total nitrogen dry season criteria so the exceedances were more clearly defined to show exceedances of only the wet season criteria for total nitrogen and the wet and dry criteria for nitrate-nitrite and ammonium.
7) Recent data showed that in addition to the previously listed parameters, Kihei Coast (Kamaole Beach #1) station should be listed for turbidity in the dry season due to exceedance of the dry season criteria. This station was already listed for exceedance of the wet season turbidity standard.
8) Recent data showed that in addition to the previously listed parameters, Kihei Coast (Keawekapu Beach) station should be listed for turbidity in the dry season due to

exceedance of the dry season criteria. This station was already listed for exceedance of the wet season turbidity standard.

9) LauniuopokoWayside Park Station was listed for turbidity based on recent data that showed exceedances of both the wet and dry season standards for turbidity.
10) Mai Ponia Oe Iau Station was listed for turbidity due to recent data that showed exceedance of dry season turbidity criteria.
11) Olowalu Beach (Teen Challenge) Station was listed for turbidity based on recent data that showed exceedance of the dry season standards for turbidity.
12) Paia Outfall Station was listed for turbidity based on recent data that showed exceedances of both the wet and dry season standards for turbidity.
13) Puunoa Beach station was listed for turbidity based on recent data that showed exceedance of the dry season standards for turbidity.
14) Spreckelsville Beach Station was listed for turbidity based on recent data that showed exceedances of both the wet and dry season standards for turbidity.
15) Wailea Beach station was listed for turbidity due to recent data that showed exceedances of both the wet and dry season criteria for turbidity.

Oahu – Streams

1) The results for total nitrogen and total phosphorous were questionable because many of the samples were measured for dissolved rather than total nutrients. This may cause artificially low readings; therefore, the parameters listed for Kahaluu, Waikele and Kaneohe Streams will remain the same.
2) The turbidity parameter was added to the Nuuanu Stream System listing based on recent combined data that showed exceedance of the wet season turbidity standard.
3) HIDOH added "Total Chlordane" as a listed pollutant for Manoa and Nuuanu streams based on two lines of evidence, emerging from USGS data collection for the National Water-Quality Assessment (NAWQA). Similarly, Dieldrin was added as a listed pollutant for Manoa, Nuuanu and Kaneohe streams after finding exceedances of both CSQG and NYSDEC standards in accordance within the narrative standards laid forth in HAR 11-54-04. Levels of dieldrin measured in Manoa stream also exceeded state water column criteria.

Oahu – Coastal

1) Chlorophyll *a* was added as a pollutant of the Manoa-Palolo Stream (KHS) station.
2) Recent data showed that the Hanauma Bay (oceanic) station does not exceed the total nitrogen standard so the exceedances were more clearly defined to show exceedances of the dry criteria for nitrate-nitrite and ammonium rather than simply nitrogen.
3) TMDLs have been established for Kaneohe Bay for total suspended solids, total nitrogen and total phosphorous.
4) The listing for Kaneohe Bay (Southern Region) station was changed to include the following additional pollutants: total nitrogen (dry season only), nitrate-nitrite (wet and dry season) and ammonium (wet and dry season). Data showed exceedances of the respective criteria and no exceedance of the wet season total nitrogen criteria. In addition to exceedance of the wet turbidity criteria, recent data showed exceedance of the dry turbidity criteria as well; therefore, the listing was changed to reflect this.

5) The listing for Kaneohe Bay (Central) station was changed to include the following additional pollutants: total nitrogen (dry season only), nitrate-nitrite (wet and dry season) and ammonium (wet and dry season). Data showed exceedances of the respective criteria and no exceedance of the wet season total nitrogen criteria.
6) The listing for Kaneohe Bay (Northern Region) station was changed to include the following additional pollutants: total nitrogen (dry season only), nitrate-nitrite (wet and dry season) and ammonium (wet and dry season). Data showed exceedances of the respective criteria and no exceedance of the wet season total nitrogen criteria.
7) The listing for Kawela Beach station was incorporated into the Kawela Bay station listing because these stations were, according to HIDOH documentation, the same station.
8) Kualoa Beach Park Station was listed for enterococcus based on recent data that showed exceedance of the enterococcus wet season standard.
9) The listing for Maunalua Bay (open coastal) station was changed to include the following additional pollutants: total nitrogen (wet season only), nitrate-nitrite (wet and dry season) and ammonium (wet and dry season). Data showed exceedances of the respective criteria and no exceedance of the dry season total nitrogen criteria. In addition to exceedance of the wet chlorophyll *a* criteria, recent data showed exceedance of the dry chlorophyll *a* criteria as well; therefore, the listing was changed to reflect this.
10) The listing for Kaiaka Bay station was changed to include the following additional pollutants: total nitrogen (wet season only), nitrate-nitrite (wet and dry season) and ammonium (wet and dry season). Data showed exceedances of the respective criteria and no exceedance of the dry season total nitrogen criteria.
11) Waimanalo Bay Station was listed for enterococcus based on recent data that showed exceedance of the enterococcus wet season standard.
12) Based on a 1998 HIDOH fish consumption advisory, HIDOH will add organochlorine pesticides and lead as listed pollutants in the Ala Wai Canal.
13) PCBs will be added as listed pollutants in Pearl Harbor based on a recent HIDOH fish consumption advisory.

FUTURE MONITORING

Many of the data sets analyzed in this report provided insufficient support for listing/delisting decisions. Although this information was inadequate for our purposes, it should be reported. The table in APPENDIX C summarizes the information gained from these analyses, which should be helpful in prioritizing future monitoring efforts. In addition to APPENDIX C, waterbodies that may be estuarine and are listed for enterococci should evaluated to determine whether they are in fact estuarine. The State enterococci criterion currently does not apply to estuaries.

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New York State Department of Environmental Conservation (NYSDEC), Division of Fish, Wildlife and Marine Resources. 1999. *Technical Guidance for Screening Contaminated Sediments*. (http://www.dec.state.ny.us/website/dfwmr/habitat/seddoc.pdf).

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APPENDIX A: Clean Water Act §303(d) – Listing & Delisting Criteria for Hawaii State Surface Waters

40 CFR Part 130.7(b)(5) and (6) identify a broad set of data sources and submittal requirements that states must consider prior to developing a Clean Water Act §303(d) List of Impaired Waters (List) for submittal to the U.S. Environmental Protection Agency (EPA). The sole regulatory requirement [40 CFR Part 130.7(5)] governing data selection is the statement that "Each state shall assemble and evaluate all existing and readily available water quality-related data and information to develop the list required by §§130.7(b)(1) and §§130.7(b)(2)." If waters are not listed, "good cause" must be demonstrated on the basis of availability of newer and/or more accurate water quality data, past analytical flaws, or changes in conditions [40 CFR Part 130.7(6)].

For the 2002 List, the Hawaii State Department of Health (HIDOH) screened available data according to listing criteria, below, that allow sorting of surface water quality data into one of three priority rankings in order to provide a sound basis for determining if specific water bodies should be listed or delisted. Data evaluated at the end of each successive listing cycle shall have been collected within the six-year period prior to each EPA-required submittal deadline. A six-year window was chosen to ensure that data reviewed for each listing cycle are both relatively recent and available in sufficient quantity to warrant a Statewide water quality data review.

Data Sources:

Data from the following sources may be used for making listing or delisting decisions in lieu of or in addition to the regular Clean Water Branch sampling, provided that an acceptable written QA/QC Plan or other documented data quality assurance process was utilized during sample collection and analysis and is available for review, if requested:

1) United States Geological Survey (USGS)
2) National Oceanic & Atmospheric Administration (NOAA)
3) Universities
4) Community groups, individuals & respondents to the CWB 2001 "Call for Data"
5) HIDOH Hazard Evaluation and Emergency Response Office (HEER)
6) Military
7) United States Fish and Wildlife (USFWS)
8) Superfund
9) United States Department of Agriculture (USDA)
10) Special projects by HIDOH Clean Water Branch
11) Other government agencies
12) Environmental Assessments and Environmental Impact Statements
13) Consulting Firms
14) Private & public entities operating under water pollution control permits

Data Quality:

Acceptable written QA/QC documentation appropriate for the project, and containing descriptions of procedures used during sample collection and analysis, must be available for review, if requested.

Listing Priority 1:

Waters will be listed if these criteria are met for conventional pollutants (total suspended solids, nutrients, chlorophyll a, temperature, dissolved oxygen, pH, indicator bacteria) and toxic substances compiled in the Hawaii Administrative Rule, Chapter 11-54, Water Quality Standards:

1. Conventional pollutants - collect and analyze at least ten (10) samples per water body.
    a. For streams, there must be at least two stations per stream (upper and lower) and at least five (5) samples per station.
    b. For non-flowing fresh water bodies such as ponds and reservoirs, and for tidally-influenced water bodies such as estuaries and coastal waters, the samples must be distributed either on transects or randomly over the extent of the water body or section of water body sampled.
        - In order to obtain a representative sample for evaluating water quality over the area of concern, not only at a single point, samples should be collected along onshore-offshore transects extending seaward at least 50 feet, or at randomly scattered points across the surface of the area of concern.
    c. The geometric means exceed the corresponding water quality criteria. In order to independently evaluate the "10% of the time," "2% of the time," and "wet/dry season" criteria, sample sizes for the 10% criteria must be 100, for the 2% criteria must be 500 , wet season criteria must be 10 and for the dry season criteria must 10. If wet and dry season data are combined because insufficient sample sizes exist to evaluate the standards separately and the geometric mean of this data only exceeds the dry season geomean standard, a majority of the raw data dry season samples must exceed the dry season standard to warrant listing.
2. Toxic substances - collect and analyze at least three samples per water body for toxic substances; compute the sample geometric mean and compare to the numeric criteria listed in §11-54-04(a)
3. Prepare photographs and written descriptions of the sampling sites.
4. Prepare a general visual assessment of the water body that contains sufficient information to place the water body in the context of surrounding land uses and overall condition of the habitat.

Listing Priority 2:

Waters may be listed if all data requirements under Listing Priority 1 are not met, provided that other factors are present such as:

1. The majority of sample values in a data set of 5 - 9 values exceed the corresponding criteria in the rule by a factor of 2 or more.

2. Sample sizes between 50 and 90 are available for evaluation of the "10% of the time," 250 and 450 for the "2% of the time," and 10 for the "wet"or dry season" criteria.
3. The type of water quality problem identified is particularly severe (i.e., each of two measurements of a toxic substance is more than twice the corresponding water quality criterion.
4. For narrative information, at least three sampling events are presented, direct correlations to the narrative criteria in 11-54-04 can be established and the narrative standards are exceeded. Data sets for evaluation of narrative criteria must include at least 3 sampling events and represent conditions in both the wet and dry seasons. These narrative criteria may be evaluated using HIDOH approved habitat or biological assessments as long as they can be directly correlated to specific narrative criteria in HAR 11-54-04.
5. Toxic substances - collect and analyze at least three samples per water body for toxic substances; compute the sample geometric mean and compare to the narrative criteria listed in §11-54-04(a). Acute toxicity standards for sediment may be evaluated using broadly accepted standards such as those developed in Canada and New York, provided that HIDOH deems them appropriate for use in the Hawaiian environment.

Listing Priority 3:

These waters are considered a high priority for additional monitoring; data will be assessed at the end of the next listing cycle and a listing decision made at that time:

1. ≤ 5 sample values are available.
2. ≤ 5 samples were collected during a single storm event.
3. <3 sampling events for determination of toxic or narrative standard exceedances.
4. Other information is limited and inconclusive.

Delisting Criteria:

Waters may be delisted if the data show that water quality standards are met, and the appropriate sample sizes and other information required under Listing Priority 1 are available.

APPENDIX B: Communications Summary

1. **United States Geological Survey (USGS)**
   - Data accessed from website at http://wwwdhihnl.wr.usgs.gov/nawqa/ .

2. **National Oceanic and Atmospheric Administration (NOAA)**
   - No water quality data readily available.

3. **Universities**

Water Resources Research Center
University of Hawaii at Manoa
- Contacted by phone.
- As of 7/02, no information received.

Hawaii Natural Heritage Program
University of Hawaii at Manoa
- Contacted by phone.
- 7/02 Sent CD with Hawai'i GAP analysis program data on species composition. Not useful for listing at this time.

4. **Community Groups, Individuals and Respondents to the 2001 "Call for Data"**

Nawiliwili Watershed Association
- Contacted by phone and email.
- 7/02 emailed Hydrolab data for review.

Sierra Club
- Spoke with island of Hawaii representative.
- Currently, there is no freshwater data. Initial data will become available at the end of the summer for near shore marine environments only.

Hanalei Heritage River
- Contacted by phone.
- No response received.

Waimanalo Watershed
- Spoke with representative, who requested more information.
- She said that the samples that have been collected in Waimanalo Stream are on the shelves at the Water Resources Research Center at UH ready to be analyzed.
- Representative sent email requesting DOH to review Eric DeCarlo's *Investigations of Waimanalo Stream* for temperature, DO and pH exceedances.

5. **HIDOH Hazard Evaluation and Emergency Response Office (HEER)**
   - Contacted by phone
   - The HEER office only gets involved when there is a big spill (chemical, oil, etc).

- The office usually helps with the clean up process and rarely takes samples.

6. Military
- Wendy Wiltse, EPA, reviewed military environmental assessments and investigations.

7. United States Fish and Wildlife (USFWS)
- Contacted by phone.
- No response received after subsequent reminder.

8. Superfund
- No water quality data readily available.

9. United States Department of Agriculture (USDA)
- Contacted by phone.
- No response.

10. HIDOH Clean Water Branch
- Received monitoring data 7/02.
- Received from Enforcement Section permit numbers, expiration dates, the receiving water bodies and the classification (one dealing with the general permit and the other dealing with individual permits). The permits usually required water quality measurement, but measurements were only done near the end of the pipe.
- Spoke with Enforcement Section representative 7/02 to discuss copper exceedances at Barber's Point Harbor, Oahu.

11. Other Government Agencies

Department of Land and Natural Resources (DLNR)
- Contacted Division of Aquatic Resources by phone
- No response received.

12. Environmental Assessments and Environmental Impact Statements
- Wendy Wiltse, EPA, reviewed environmental assessments and environmental impact statements recently submitted to EPA.

13. Consulting Firms

AECOS, Inc.
- Contacted by phone.
- Data not readily available

14. Private & public entities operating under water pollution control permits
- Covered under Clean Water Branch communications.

APPENDIX C: List of Waterbodies for Future Monitoring

The following table lists waterbodies that through data analysis required for this report were identified as needing additional monitoring.

Station Number**	Station Name	# of Lab Samples	# of Field Samples	Considerations	Major reasons for Low Sample Count
2-1-15	Lumahai	1	4/8		Upper Site Inaccesible
2-1-17	Waipa	1	4/8		Upper Site Inaccesible
2-1-18	Waioli	2	8	Drains into listed coastal station (enterococci)	
2-1-19	Hanalei	6	15	Listed in 1998 for turbidity	
2-1-25	Kalihiwai	1		Drains into listed coastal station (enterococci)	
2-1-25	Kalihiwai		4/8	Candidate for UAA*	Upper Site Inaccessible
2-1-28	Kilauea	2	7/8		
2-1-34	Moloaa	2	8		
2-2-01	Anahola	2	8		
2-2-04	Kapaa	4	16	Listed in 1998 for turbidity	
2-2-08	Wailua	6	25	Mouth Listed in 1998 for enterococci, 2002 data shows NO turbidity exceedance	
2-2-10	Wailua		0/2	Candidate for UAA*	No sampling, site located in Estuary
2-2-12	Hanamaulu	2	8	Listed in 1998 for turbidity	
2-2-14	Puali	3	5/6		DRY
2-2-15	Huleia	4	6/10	Listed in 1998 for turbidity	
2-3-04	Lawai	2	8		
2-3-07	Hanapepe	4	6/10	Listed in 1998 for turbidity, 2002 Visual Assessment indicates possible impairment by other parameters	Equipment Failure
2-4-04	Waimea	2	6/10	Listed in 1998 for turbidity	Equipment Failure
3-1-03	Paumalu		0/4	Candidate for UAA*	DRY or brackish water
3-1-04	Kawela	1		Candidate for UAA*	
3-1-04	Kawela		2/10	Candidate for UAA*	DRY or brackish water
3-1-05	Oio		1/5	Candidate for UAA*	DRY
3-1-06	Malaekahana		4/10	Candidate for UAA*	DRY
3-1-07	Kahawainui		1/5	Candidate for UAA*	DRY
3-1-08	Wailele	1	12	2002 data shows turbidity exceedance (Priority 2). Need photographic and written documentation.	
3-1-09	Koloa	1	4/5		DRY
3-1-10	Kaipapau	2	6/10	Candidate for UAA*	DRY
3-1-11	Maakua		1/5	Candidate for UAA*	DRY
3-1-13	Kaluanui	1	4/5		DRY
3-2-15	Waimanalo	168	168/168	Need photographic and written documentation of sites	
3-1-16	Punaluu	2	10	2002 data shows turbidity exceedance. Need photographic and written documentation.	
3-1-18	Kahana	6	10/13	Drains into 1998 listed coastal segment (tradtl. pollutants)	inaccessible
3-2-02	Waikane	6	10/18	2002 Visual Assessment indicates possible moderate impairment by turbidity and trash	inaccessible

*Since these streams were dry during many of the sampling events, a preliminary evaluation may be conducted in the future to determine whether a Use Attainability Analysis (UAA) is warranted. This process is formally described in 40 CFR 131.10.

** These codes denote stream location and were adopted from the Hawaii Stream Assessment (COWRM and NPS 1990). The first number in each code represents the island (2=Kauai, 3=Oahu, 4=Molokai, 6=Maui and 8=Hawaii). For further information regarding these codes, please consult the Hawaii Stream Assessment.

APPENDIX C: Future Monitoring (cont.)

Station Number**	Station Name	# of Lab Samples	# of Field Samples	Considerations	Major reasons for Low Sample Count
3-2-04	Waiahole	6	10/16	2002 data shows NO turbidity exceedance	inaccessible
3-2-08	Heeia	6	11/15	Drains into 1998 listed coastal segment (tradtl. pollutants)	
3-2-09	Keaahala	4	8/12	Listed in 1998 for nutrients, turbidity and trash	
3-2-11	Kawa	107	107/107	Need photographic and written documentation	
3-3-09	Nuuanu	4	10/12	Listed in 1998 for nutrients and trash, 2002 data shows turbidity exceedance	Equipment Failure
3-3-11	Kalihi	4	10/12	Listed in 1998 for nutrients, turbidity and trash, 2002 data shows turbidity exceedance	Equipment Failure
3-3-12	Moanalua	4	7/12	Candidate for UAA*	UPPER SITE DRY
3-4-02	Halawa	4	6/12	Candidate for UAA* . Biological Assessment showed stream may be impaired	DRY
3-4-05	Waimalu	4	6/12	Candidate for UAA*	DRY
3-4-06	Waiawa	4	5/12	Candidate for UAA*	DRY
3-4-11	Honouliuli	0/2	0/6	Candidate for UAA*	DRY
3-5-04	Mailiili	0	0	Mailiili Beach identified by NRDC as one of the 70 dirtiest beaches in America	
3-6-06	Kiikii	4	6/16	Candidate for UAA*, 2002 Visual Assessment scored medium to high	DRY
3-6-07	Paukauila	4	9/14	Listed in 1998 for nutrients and turbidity, 2002 Visual Assessment inconclusive need assessment of lower freshwater segment	No access to upper watershed
3-6-08	Anahulu	2	4/7	Listed in 1998 for nutrients and turbidity, 2002 Visual Assessment contradicts 1998 listing	No access to upper watershed
4-1-09	Pelekunu		6/9		inaccessible
4-2-01	Pohakupili		0/2	Candidate for UAA*	Dry
4-2-02	Honoulimaloo		2		
4-2-03	Honouliwai		6	Drains into listed coastal segment (traditional pollutants)	
4-2-04	Waialua	4		Drains into 1998 listed coastal segment (traditional pollutants, entero, chor)	
4-2-05	Kainalu		1/6	Candidate for UAA*	DRY or Ponded Water
4-2-06	Honomuni		1/3	Candidate for UAA*	DRY or Ponded Water
4-2-08	Mapulehu		0/12	Candidate for UAA*	DRY
4-2-09	Kaluaaha		0/3	Candidate for UAA*	DRY
4-2-10	Kahananui		0/2	Candidate for UAA*	DRY
4-2-11	Manawai		0/3	Candidate for UAA*	DRY
4-2-12	Ohia		0/3	Candidate for UAA*	DRY
4-2-13	Wawaia		0/12	Candidate for UAA*	DRY
4-2-14	Kamalo		1/3	Candidate for UAA*	DRY
4-2-15	Kawela		0/12	Candidate for UAA*	DRY
4-2-16	Papio		1/2		DRY
6-1-01	Ukumehame	6	14/16	Drains into 1998 listed coastal station (enterococci), 2002 data shows turbidity exceedance	Calibration
6-1-02	Olowalu	3/4	0/12	Candidate for UAA*	DRY
6-1-03	Launiupoko	0/2	0/12	Candidate for UAA*	DRY
6-1-04	Kauaula	0/2	0/10	Candidate for UAA*	DRY
6-1-05	Kahoma	0/2	0/12	Candidate for UAA*	DRY
6-1-06	Waihikuli	0/2	0/10	Candidate for UAA*	DRY
6-1-07	Honokowai	0/2	0/12	Candidate for UAA*	DRY
6-1-08	Kahana	0/2	0/12	Candidate for UAA*	DRY
6-1-09	Honokahua		0/8	Candidate for UAA*	DRY
6-1-10	Honolua	0/2	2/12	Candidate for UAA*	DRY
6-1-11	Honokohau	4	10/12	2002 data shows possible turbidity exceedance	Calibration
6-2-01	Poelua		0/4	Candidate for UAA*	DRY
6-2-02	Honanana		0/4	Candidate for UAA*	Dry-one site only

APPENDIX C: Future Monitoring (cont.)

Station Number**	Station Name	# of Lab Samples	# of Field Samples	Considerations	Major reasons for Low Sample Count
6-2-03	Kahukuloa		6		
6-2-05	Waiolai		4		
6-2-06	Makamakaole	4	10/12	2002 data shows turbidity exceedance	Calibration
6-2-07	Waihee	2	8	Drains into listed coastal segment (turbidity and chlorophyll a)	
6-2-08	Waiehu	3	8/12		DRY
6-2-09	Iao	2/4	6/12	Candidate for UAA*	Lower reach DRY
6-2-10	Waikapu	5/6	7/16	Candidate for UAA* Dat a available from USFWS	Lower reach DRY
6-3-01	Maliko	2	6	2002 data shows turbidity exceedance (Priority 2)	
6-3-02	Kuiaha	1/2	4/14	Candidate for UAA*	DRY
6-3-03	Kaupakulua	0/2	1/13	Candidate for UAA*	DRY
6-3-04	Manawaiiao	0/2	0/12	Candidate for UAA*	DRY
6-3-05	Uaoa	0/2	0/12	Candidate for UAA*	DRY
6-3-07	Kakipi	1	2/6	Candidate for UAA*	DRY
6-3-08	Honopou	2	5/6		Equipment Failure
6-3-09	Hoolawa	1	5/6		Equipment Failure
6-3-10	Waipio	1	5/6		Equipment Failure
6-3-11	Hanehoi	1	2/6	Candidate for UAA*	DRY
6-3-12	Hoalua	0	0/6	Candidate for UAA*	DRY
6-3-13	Hawawana	1	4/6		Equipment Failure
6-3-14	Kailua	1	3		
6-3-15	Nailiilihaele		2/3		DRY
6-4-01	Oopuola	1	2/3		Equipment Failure
6-4-02	Kaaiea	1	2/3		Equipment Failure
6-4-03	Kolea	1	2/3		Equipment Failure
6-4-04	Waikamoi	1	2/3		Equipment Failure
6-4-06	Puohokamoa	1	3		
6-4-07	Haipuaena	1	3		
6-4-08	Punalau	1	3	Drains into listed coastal station (enterococci)	
6-4-09	Honomanu		2/3		DRY
6-4-10	Nuaailua	1	3		
6-4-11	Piinaau	1	3		
6-4-12	Ohia	1	3	Listed in 1998 for nutrients, turbidity and trash	
6-4-13	Waiokamilo	1	3		
6-4-15	W.Wailuaiki	1	3		
6-4-16	E.Wailuaiki	1	3		
6-4-17	Kopiliula	1	2/3		DRY
8-1-03	Kumakua		0/6	Candidate for UAA*	Dry
8-1-06	Hanaula	0/2	0/12	Candidate for UAA*	DRY
8-1-07	Hapahapai	2/4	8/12		Lower reach DRY
8-1-08	Pali Akamoa	0/2	1/14	Candidate for UAA*	DRY
8-1-09	Wainaia	4/5	10/14	2002 data shows turbidity exceedance	Lower reach DRY
8-1-10	Halelua	1	4/6		DRY
8-1-11	Halawa	3	9/12		Lower reach dry
8-1-12	Aamakao	4	12	2002 data shows turbidity exceedance	
8-1-13	Niulii	4	12	2002 data shows turbidity exceedance	
8-1-14	Waikama	6		2002 data shows turbidity exceedance	
8-1-15	Pololu	2/4	6/12	Candidate for UAA*	Lower reach DRY
8-1-31	Waiaalala	0	0	Bioassessment indicates possible impairment	
8-1-44	Wailoa/Waipio	2	8	Biological assessment showed stream may be impaired.	
8-1-45	Lalakea	2	8		
8-1-47	Waiulili	2	7/8		DRY
8-1-49	Waipunahoe	1	4/8	Candidate for UAA*	DRY

APPENDIX C: Future Monitoring (cont.)

Station Number**	Station Name	# of Lab Samples	# of Field Samples	Considerations	Major reasons for Low Sample Count
8-1-50	Waialeale	1	4/8	Candidate for UAA*	DRY
8-1-51	Waikoloa	1	4/8	Candidate for UAA*	DRY
8-1-52	Kapulena		1/8	Candidate for UAA*	DRY
8-1-53	Kawaikalia	1	5/8	Candidate for UAA*	DRY
8-1-54	Malanahe		0/8	Candidate for UAA*	DRY
8-1-61	Nienie	1	3/8	Candidate for UAA*	DRY
8-1-62	Papuaa		0/8	Candidate for UAA*	DRY
8-1-65	Kahaupu		1/8	Candidate for UAA*	DRY
8-1-66	Kahawailiili		1/8	Candidate for UAA*	DRY
8-1-67	Keahua		0/8	Candidate for UAA*	DRY
8-1-68	Kalopa		1/8	Candidate for UAA*	DRY
8-1-69	Waikaalulu		2/8	Candidate for UAA*	DRY
8-1-70	Kukuilamalamahii		0/8	Candidate for UAA*	DRY
8-1-71	Alilipali		0/8	Candidate for UAA*	DRY
8-1-73	Kaumoali		1/8	Candidate for UAA*	DRY
8-1-76	Waipunahina		5/16	Candidate for UAA*	DRY
8-1-77	Waipunalau	1			
8-2-32	Hakalau	0	0	Listed in 1998 for nutrients and turbidity, 2002 Visual Assessment severely contradicts 1998 listing	
8-2-33	Kolekole	6	15/16	Listed in 1998 for nutrients and turbidity, 2002 data is inconclusive as to whether the turbidity standard is exceeded, 2002 Visual Assessment contradicts 1998 listing for nutrients and turbidity	inaccessible
8-2-37	Kapehu	4	12	2002 data shows NO turbidity exceedance	
8-2-49	Kaieie	0	0	Listed in 1998 for nutrients. 2002 Visual Assessment severely contradicts listing.	
8-2-56	Honolii	4	12	Listed in 1998 for nutrients and turbidity	
8-2-60	Wailuku	4	12	Listed in 1998 for nutrients and turbidity. 2002 Visual Assessment inconclusive needs assessment of lower freshwater segment. Delisted in 2002 for turbidity.	
226 (Oahu)	Waimanalo State Park	61	0	Need photographic and written documentation	
Oahu	Kalaeloa Barber's Point			Notice of Finding of Violation for Copper	
Oahu	Manuwai Canal			Data available in military investigation	
Oahu	Kumumauu Canal			Data available in military investigation	
Maui	Maalaea Bay			Some data may be available from Steven Dollar	
Oahu	Kawa Estuary	100	100	Need photographic and written documentation,	
Oahu	Waimanalo Estuary	72	72/72	Need photographic and written documentation	
Hawaii	Wailea Bay			Reported to have been devastated by a severe 100 year storm on January 26, 2002	

APPENDIX D: Summary of AECOS, Inc. QA/QC Methods

Prepared by Susan Burr

QA/QC methods used by *AECOS* when conducting Visual Assessments

AECOS, Inc. has a Quality Management Plan (QMP) that describes its quality system for planning, implementing, documenting, and assessing the effectiveness of activities supporting environmental data operations and other environmental programs. The QMP is approved by the US Environmental Protection Agency.

Specific QA/QC methods for this project include:
Field instruments - Optic StowAway® temperature loggers manufactured by Onset Computer Corp. and the AO handheld refractomer are calibrated and maintained regularly.
Standard methods – the surveys were conducted following the NRCS Visual Assessment Protocol Version 1.0 or DOH-EPO Standard Operating Procedures. If the written protocols were deviated from, a description of the deviation occurs in the report. The lead field scientist conducted all of the visual assessments, with the assistance of others specifically trained to use the protocol or with sufficient stream ecology experience.
Record keeping – Original data sheets are maintained at the *AECOS* office. Data sheets were verified by the lead field scientist, and computer entries were checked by the lead scientist.

APPENDIX E: Summary of Tetra Tech, Inc. QA/QC Methods

Prepared by Tetra Tech, Inc.

The *Quality Management Plan for Tetra Tech=s Fairfax Group*, prepared according to *EPA Requirements for Quality Management Plans*, EPA QA/R-2 (EPA/240/B-01/002), provides the basic quality assurance and quality control (QA/QC) procedures and activities that are implemented to ensure the quality of products and services provided by Tetra Tech. This QMP has been reviewed and approved by Tetra Tech=s Principal-in-Charge, Jim Pagenkopf, and Quality Assurance Manager, Esther Peters.

The specific QA/QC procedures used by Tetra Tech for reviewing Hawaii=s water quality data for the 2002 303(d) listing cycle were based on the *Quality Management Plan for Tetra Tech=s Fairfax Group* and on technical directive received from the Environmental Planning Office of the Hawaii State Department of Health. These QA/QC procedures were performed by Tetra Tech=s technical staff and included the following tasks:

- Checking the data in a database imported from the spreadsheets received from EPA Region 9 containing STORET water quality data, to ensure that the data were accurately transferred.

- Checking all station numbers to ensure that they were based on the 1990 *Hawaii Stream Assessment: A Preliminary Appraisal of Hawaii=s Stream Resources*.

- Ensuring that data from streams with the same names were not combined when they had diverse station numbers.

Analytical data were screened by Tetra Tech's technical staff to verify that the data were of sufficient quality for comparison to water quality standards provided by EPA, Region 9, and found in Hawaii Administrative Rules, Title 11, Department of Health, Chapter 54. These data were categorized by waterbody type and by wet and dry season. Summary statistics were subsequently calculated for each of these categories and compared to the appropriate standards. An internal review of the screening, categorizing, and calculating procedures was performed by one or more supervisors of the technical staff. Database analysis was conducted using Access and a software package called Total Access Statistics 2000 (Access add-in).